

TECHNICAL MANUAL

**OPERATOR, ORGANIZATIONAL,
DIRECT SUPPORT, AND GENERAL SUPPORT**

**MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL
TOOLS LIST)
FOR**

**BULLDOZER, EARTH MOVING:
TANK MOUNTING, M9
(2590-00-708-3563)**

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(2590-00-708-363)**

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HEADQUARTERS
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OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT,
AND GENERAL SUPPORT MAINTENANCE MANUAL
(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIT)

FOR

BULIDOZBR, EARTH MOVING: TANK MOUITING, M9

(2350-00T-7-51U)

CURRENT AS OF 1 MAY 1982

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual to: Commander, U.S. Army Tank Automotive Command, ATTN: DRSTA- A, Warren, Michigan 48090. A reply will be furnished to you.

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope.

a. This manual is for your use in operating and performing organizational, direct support, and general support maintenance on the Bulldozer, Earth-Moving: Tank Mounting, M9 as applied to Tank, Combat, Full-Tracked: 105-mm Gun, M60, M60A1, M60A1 RISE, and M60A3.

b. Only vehicles having a top loading air cleaner can be reworked to accept the M9 bulldozer kit. The air breather rework and parts installation are not compatible with side loading air cleaner.

c. Vehicles with a stabilization system must be reworked so that system can be actuated with a bulldozer kit installed.

1-2. Maintenance Forms and Records. Maintenance forms and records which you are required to use are listed and explained in TM 38-750.

1-3. Administrative Storage. Refer to TM 740-90-1 for information on administrative storage.

1-4. Destruction of Army Materiel to Prevent Enemy Use. Refer to TM 750-244-6 and TM 750-244-7 for instructions on destruction of Army materiel to prevent enemy use.

1-5. Quality Assurance/Quality Control (QA/QC). No particular quality assurance or quality control manual pertains specifically to the M9 Bulldozer.

1-5.1 Hand Receipt Manuals. This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). The TM 9-2590-209-14-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) you must account for. As an aid to property accountability, additional -HR Manuals may be requisitioned from the following source in accordance with procedures in Chapter 3, AR 310-2:

The US Army AG Publication Center
2800 Eastern Blvd.
Baltimore, MD 21220

1-6. Reporting Equipment Improvement Recommendations (EIR). EIR's will be prepared on SF368. Instructions for preparing SF368 are provided in TM 38-750, The Army Maintenance Management System (TAMMS). Mail SF368 directly to: Commander, U.S. Army Tank Automotive Materiel Command. ATTN: DRSTA-MP, Warren, Michigan 48090. A reply will be furnished directly to you.

Section II. DESCRIPTION AND TABULATED DATA

1-7. Description. The M9 bulldozer kit is a hydraulically operated unit which can be mounted on the M60, M60A1, M60A1 RISE and M60A3 tanks (fig 1-1). The M9 bulldozer kit consists of the following major assemblies: (1) a blade assembly with pushbeams and tilt arms; (2) magnetic clutch and controls; (3) blade assembly control handle

and linkage; (4) carrying hooks and handle; (5) hydraulic control system consisting of mounting assembly, right-angle drive power takeoff, oil reservoir, control valve manifold, hydraulic cylinders, tubing and hoses; (6) armor guards, and (7) electrical system including headlamp adapter, power takeoff switch, cables, and related parts.

1-8. Tabulated Data..

a. General. The following data is provided for operating and servicing the M9 bulldozer.

b. Identification Plate (Fig 1-2). The identification plate for the M9 bulldozer is located on the top center of the blade assembly and is used for identification and descriptive information.

c. Angle of Blade Assembly Cutting Edge (Horizontal):

Float position 60 degrees

Lowest position 66 degrees

d. Relation of Blade Assembly Cutting Edge to Ground:

Lowest position 10 inches
below

Highest position 30 inches
above

Carrying position ... 29 inches
above

e. Rate of Lift:

Tank main engine at
1500 rpm4.00 inches
per second

Tank main engine at
2400 rpm5.50 inches
per second

f. ,Maximum Forward Speed of Tank with M9 Bulldozer Kit Installed:

Cutting edge to ground
Engine at 1500 rpm and low-
range3 miles per
hour

Cutting edge
raised;....15 miles
per hour

g. Hydraulic Oil Data:

Hydraulic system
capacity25 gallons

Reservoir capacity .. 11.5 gallons

Type of oilOE/HDO-10
lubricating
oil internal
combustion
engine

h. Weight:

Mount assembly 122 pounds

Headlamp adapters.. 8 pounds

Headlamp guards and
support..... 8 pounds

Front mounting
brackets and blade
assembly 5,995 pounds

Hydraulic cylinders,
piping, reservoir,
and guards2,584 pounds

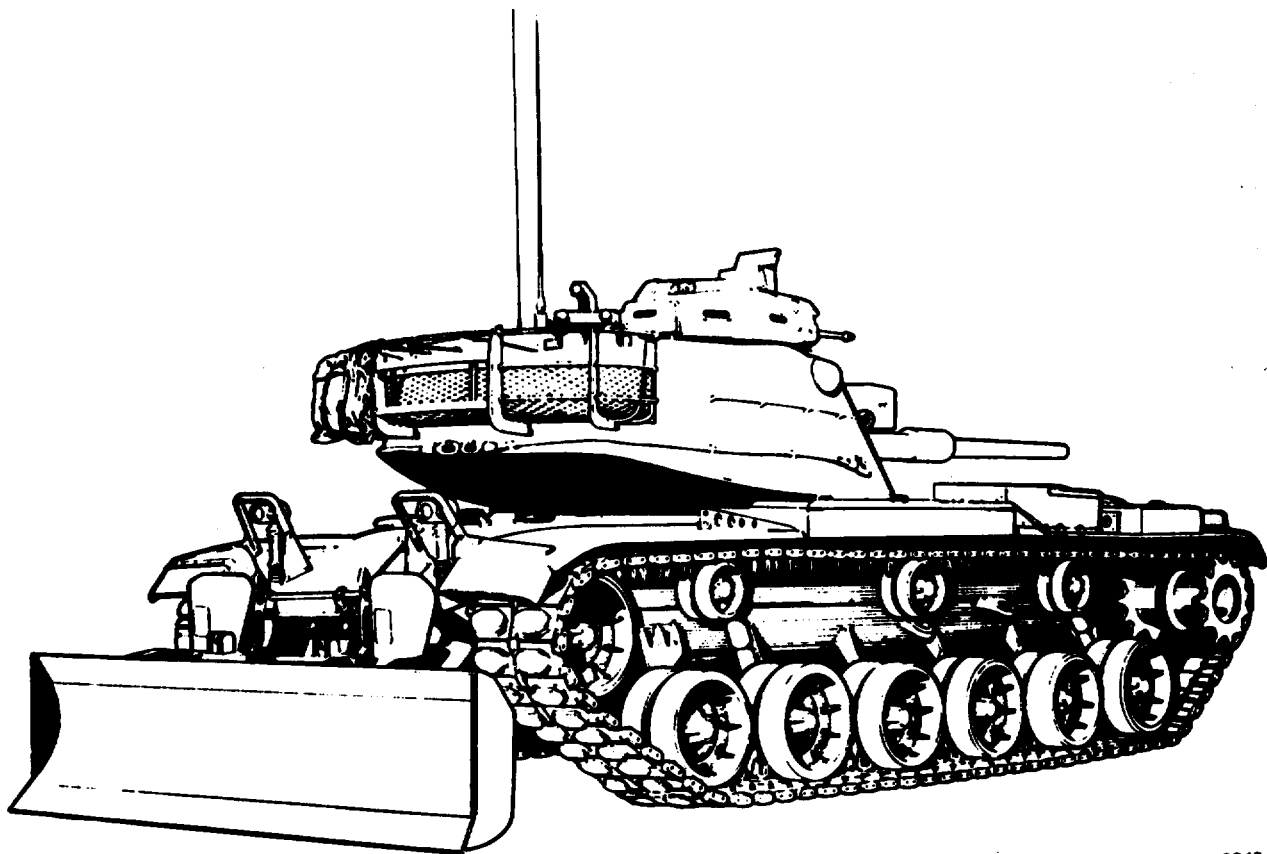
Control assembly ... 160 pounds

Fixture and
templates11 pounds

Total weight -
(less oil)8,888 pounds

1-9. Special Tools and Equipment. Special tools and equipment designed for direct support and general support repair and general use with this equipment are listed in table 1-1 and illustrated in figure 1-3. Table 1-1 and figure 1-3 contain item name and item sequence number and are used for identification throughout this manual. Table 1-1 also contains references to figures and paragraphs in the manual which describe the use of the tool. Special tools for direct support and general support maintenance are listed in Appendix E, which is the authority for requisitioning replacements.

1-10. Spares and Repair Parts. Spares and repair parts are listed and illustrated in Appendix E of this manual.



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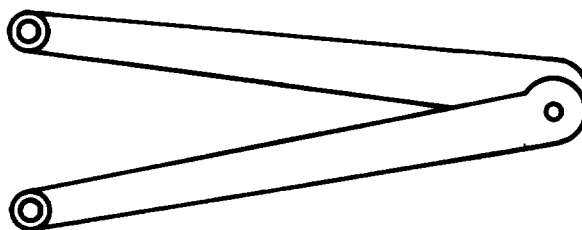
Figure 1-1. Bulldozer, earth moving: tank mounting, M9 mounted.

BULLDOZER EARTH MOVING M9	

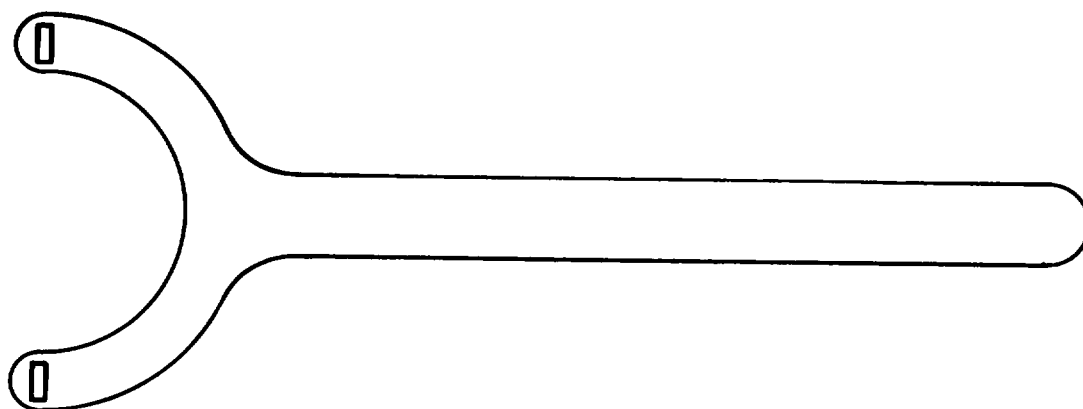
ORDNANCE CORPS, U.S. ARMY	
MFD. BY	_____
CONTRACT NO.	_____
MFR. SERIAL NO.	_____
DEL. DATE	_____ INSP. BY _____

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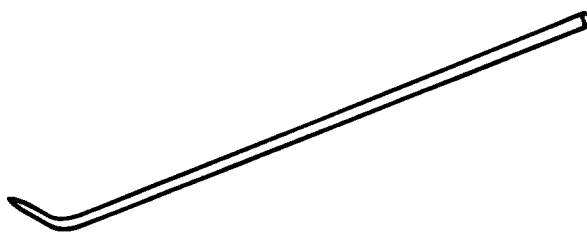
Figure 1-2. Identification plate.



1. WRENCH, SPANNER 5120-00-293-0798



2. WRENCH, SPANNER 5120-00-907-9001



3. TOOL, MECHANICAL CLUTCH ADJUSTING
5120-00-179-5667
(EARLY MODEL BULLDOZER)

TA169947

Figure 1-3. Special tools.

Table 1-1. Special Tools.

Item	Identifying Number	<u>References</u>		Use
		Fig.	Para.	
1. WRENCH, SPANNER: Adjustable Face.	5120-00-293-0798 (MS16146-2) (96906)	1-3	6-6 and 6-9	For removing and installing threaded ring on magnetic clutch assembly.
2. WRENCH, SPANNER:	5120-00-907-9001 (10952095)(19207)	1-3	6-21 and 6-24	For removing and installing threaded retainer on right- angle drive.
3. TOOL, CLUTCH ADJUSTING (EARLY MODEL BULLDOZER)	5120-00-179-5667 (7953545)(19207)	10-1	10-30	Adjust right-angle drive mechanical clutch.

1-5/(1-6 blank)

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. OPERATING INSTRUCTIONS

2-1. Introduction.

a. This section contains operating instructions and information needed to locate and operate M9 bulldozer controls and instruments.

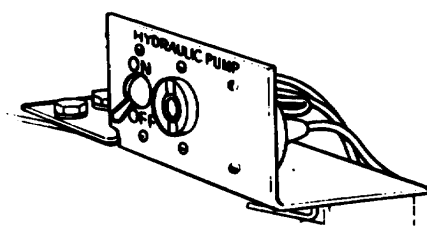
b. Prior to operating the vehicle, perform the before operation preventive maintenance checks and services contained in table 2-1.

2-2. Controls (Fig 2-1).

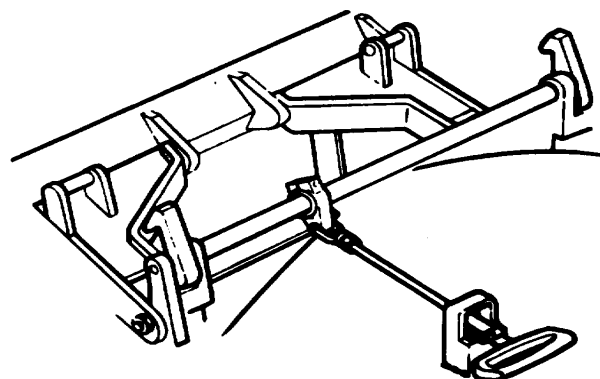
a. *Magnetic Clutch and Hydraulic Pump Switch.* The hydraulic pump magnetic clutch is controlled by moving the hydraulic pump switch mounted on top of instrument panel in the driver's compartment up or down. The switch is set to ON position to engage magnetic clutch and set to OFF position to disengage magnetic clutch.

b. *Carrying Hooks Control Handle Assembly.* The carrying hooks are engaged or disengaged by a manually operated control handle mounted on the hull in front of the driver's hatch. The carrying hooks are released by pushing forward on the control handle after the blade assembly has been raised. To engage carrying hooks, raise blade assembly and pull control handle rearward.

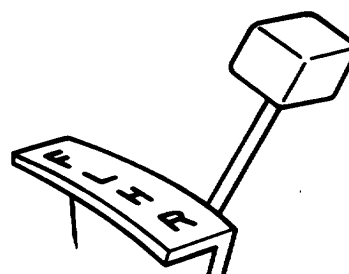
c. *Blade Assembly Manual Control Lever.* The directional control valve lever that controls the blade assembly operation is located in the driver's compartment. Movement of the lever into one of its four positions will directly affect blade assembly accordingly.



MAGNETIC CLUTCH AND HYDRAULIC PUMP SWITCH
(M60A1, M60A1 RISE, AND M60A3 SHOWN)



CARRYING HOOKS CONTROL HANDLE ASSEMBLY



BLADE ASSEMBLY MANUAL CONTROL LEVER

TA169948

Figure 2-1. Controls.

2-3. Operation (Fig 2-2 thru 2-6).

a. *Preliminary Operating Procedure (Fig 2-2).* Start engine and allow to idle. Set hydraulic pump switch to ON. Move control lever to R (raise) to raise blade assembly. Keep blade assembly at highest position. Push carrying hooks control handle forward to disengaged position. Move control lever to L (lower) and lower blade assembly to full limit of travel Raise and lower blade assembly several times. With-blade in raised position, check oil level in reservoir. Replenish as necessary (fig 3-1).

b. *Control Positions of Blade Assembly Control Handle.* Figure. 2-3 illustrates control positions of blade assembly in relation with position of control lever.

c. *Operating in F (float) Position (Fig 2-4).* With engine running, set hydraulic pump switch to ON. Hold blade assembly control lever in L (lower). When blade assembly touches ground, move control lever to F (float). In this position blade assembly rides on ground with only its weight for downward pressure.

d. *Operating in H (hold) Position (Fig 2-5).* With engine idling, set hydraulic pump switch to ON. With tank moving in low gear, move blade assembly control lever to L (lower). When blade assembly reaches desired position, release control lever. It will automatically return to H (hold).

e. *Vehicle Movement.* Up-and-down motion of vehicle must be compensated for by lowering or raising blade assembly. When front of vehicle starts to nose up, lower blade assembly far enough to compensate for vehicle motion. If vehicle engine becomes overloaded when cutting through very hard material, raise blade assembly until load on engine is reduced. When blade assembly is lowered and digging, lift slightly before turning vehicle.

CAUTION

With the blade assembly in travel position, use caution in both the stabilized and power modes to insure that the 105-mm gun travel is not interrupted by the blade assembly.

NOTE

The vehicle turning radius is increased greatly when blade assembly is in digging position.

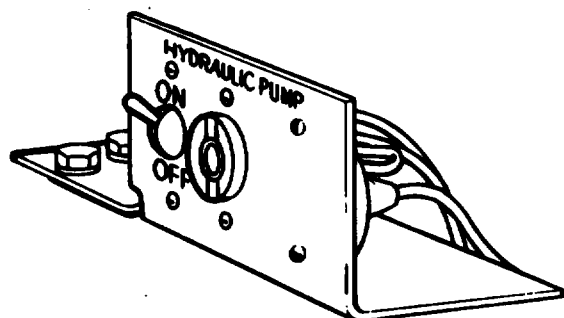
(1) Keep vehicle at a steady speed when dozing, raising or lowering blade assembly as required to compensate for uneven ground. Always operate vehicle in low gear when dozing.

(2) Do not use M9 bulldozer as a ram. The blade assembly must be used for steady pushing rather than ramming action. When turning vehicle with a loaded blade, lift blade assembly slightly. Do not lower blade assembly to the extent that it will stall the vehicle engine. Only take a cut as large as can be moved without slowing down the engine. When dozing moist earth or sticky material, keep blade assembly clean by leaving blade at dozing level during last few feet of forward travel. Shift into reverse and back up several feet before raising blade assembly.

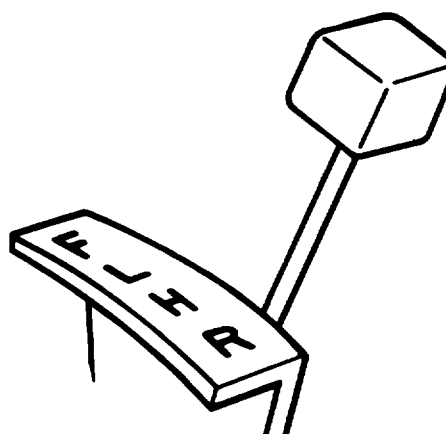
f. *Taking M9 Bulldozer Out of Operation.* The M9 bulldozer is taken out of operation by raising the blade assembly, engaging carrying hooks, and turning off hydraulic pump switch (fig 2-6).

CAUTION

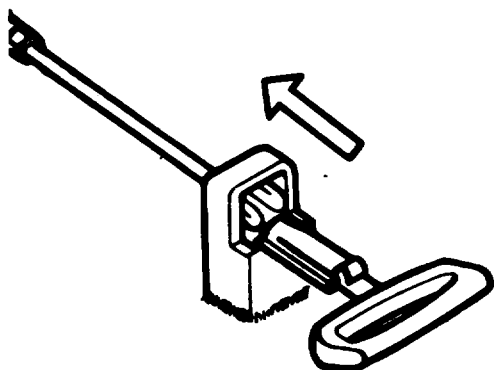
Do not move the dozer control valve handle to L (lower) position to take slack out of carrying hooks as the hydraulic cylinder pressure may damage the carrying hook assembly.



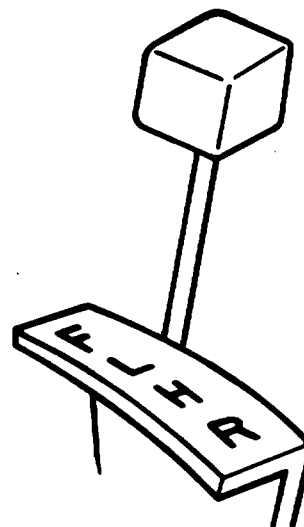
1. WITH TANK ENGINE IDLING, SET HYDRAULIC PUMP SWITCH TO ON POSITION. (M60A1, M60A1 RISE, AND M60A3 SHOWN).



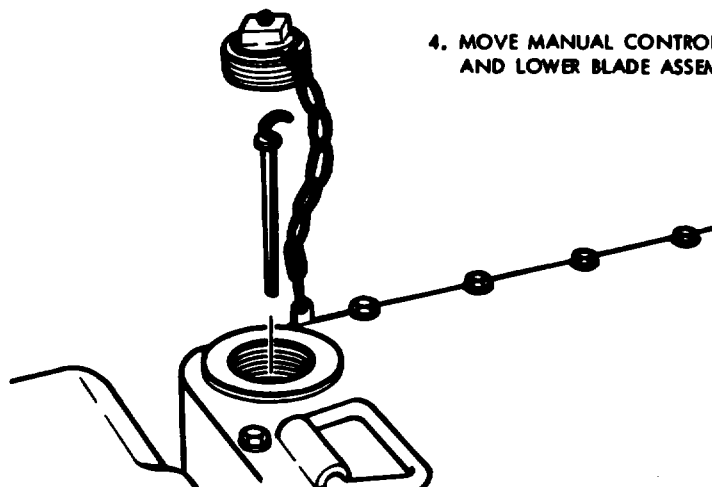
2. MOVE MANUAL CONTROL LEVER TO R (RAISE) AND RAISE BLADE ASSEMBLY.



3. PUSH CARRYING HOOK HANDLE TO DISENGAGE HOOKS.



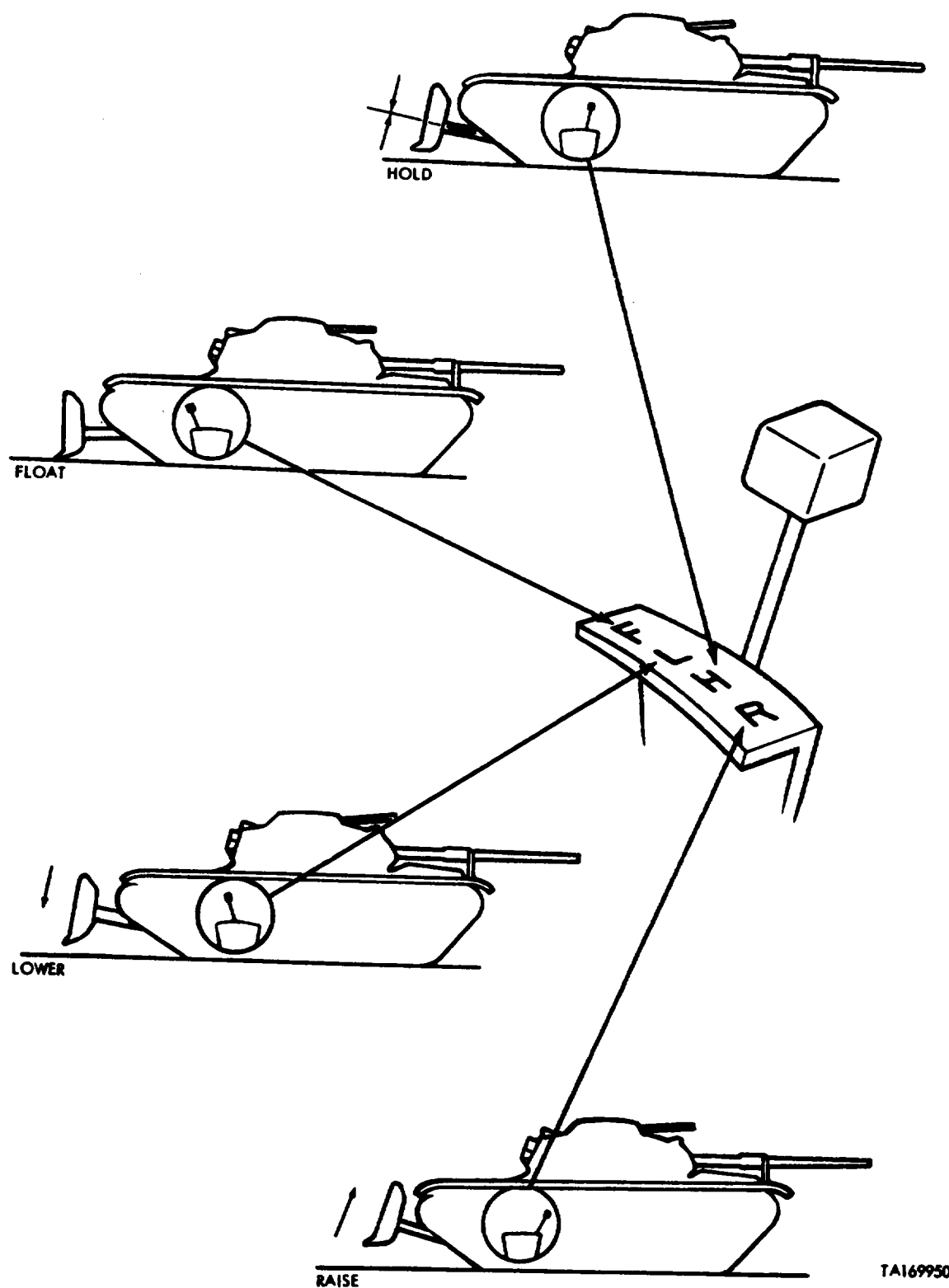
4. MOVE MANUAL CONTROL LEVER TO L (LOWER) AND LOWER BLADE ASSEMBLY.



5. RAISE AND LOWER BLADE ASSEMBLY SEVERAL TIMES. WITH BLADE IN RAISED POSITION, CHECK THE OIL LEVEL IN RESERVOIR. REPLENISH AS NECESSARY.

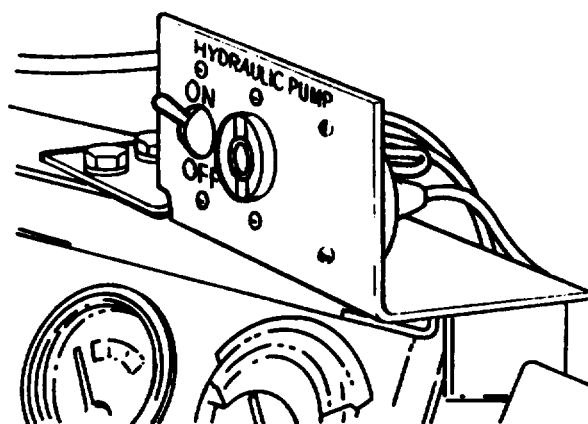
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Figure 2-2. Preliminary operating procedures..

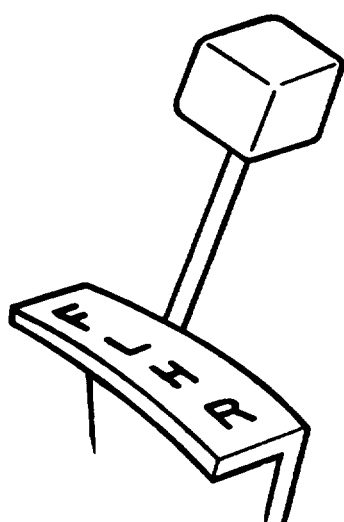


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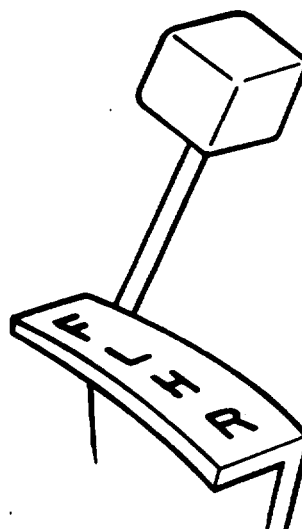
Figure 2-3. Control positions of blade assembly manual control lever.



1. WITH ENGINE RUNNING, SET HYDRAULIC PUMP SWITCH TO ON POSITION.
(M60A1, M60A1 RISE, AND M60A3 SHOWN)



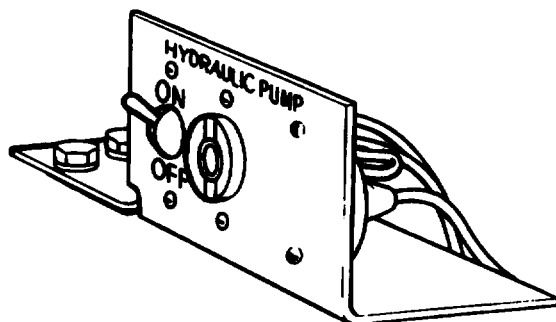
2. HOLD BLADE ASSEMBLY MANUAL CONTROL LEVER IN L POSITION.



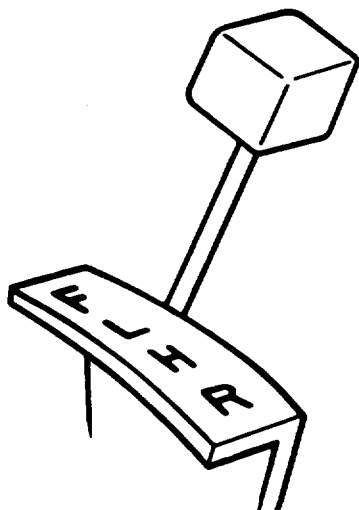
3. WHEN BLADE ASSEMBLY TOUCHES GROUND, MOVE MANUAL CONTROL LEVER TO F POSITION.

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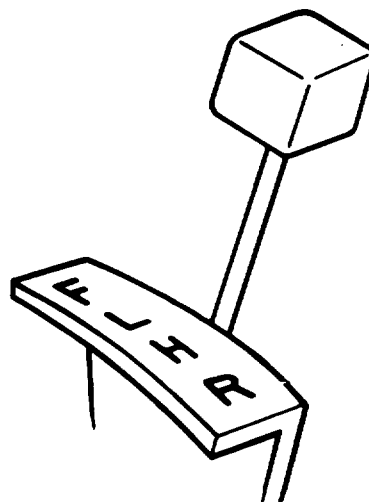
Figure 2-4. Operating bulldozer in float position.



1. WITH TANK ENGINE IDLING, SET HYDRAULIC PUMP SWITCH TO ON POSITION. (M60A1, M60A1 RISE, AND M60A3 SHOWN).



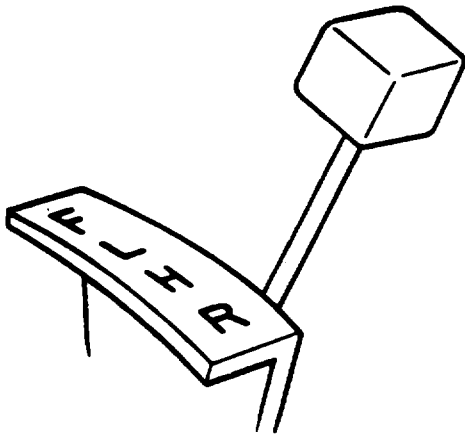
2. WITH TANK MOVING IN LOW GEAR, MOVE THE BLADE ASSEMBLY MANUAL CONTROL LEVER TO L POSITION.



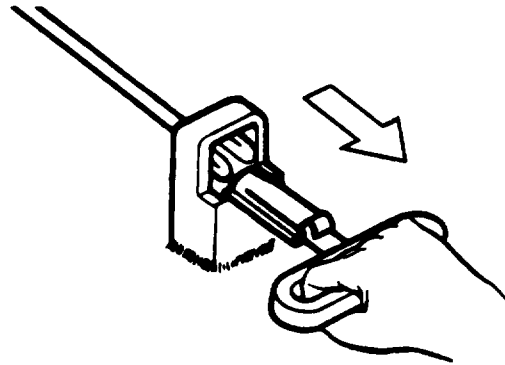
3. WHEN THE BLADE ASSEMBLY REACHES THE DESIRED POSITION, RELEASE THE MANUAL CONTROL LEVER, IT WILL AUTOMATICALLY RETURN TO H POSITION.

TA169952

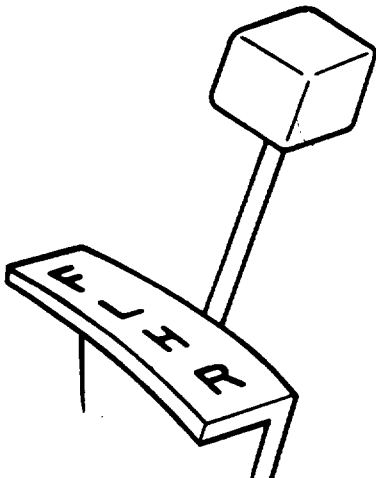
Figure 2-5. Operating bulldozer in hold position.



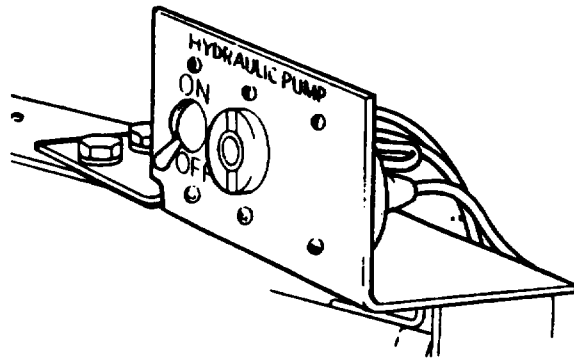
1. MOVE BLADE ASSEMBLY MANUAL CONTROL LEVER TO R POSITION.



2. WHEN BLADE IS FULLY ELEVATED, PULL HANDLE TO ENGAGE CARRYING HOOKS.



3. WHEN THE CARRYING HOOKS ARE ENGAGED, RELEASE THE MANUAL CONTROL LEVER. LEVER WILL AUTOMATICALLY RETURN TO H POSITION.



4. SET HYDRAULIC PUMP SWITCH TO OFF POSITION. (M60A1, M60A1 RISE, AND M60A3 SHOWN).

TA169953

Figure 2-6. Removing bulldozer from operation.

Section II. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-4. General Preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain it in a serviceable condition, prevent breakdown, and insure maximum operational readiness. Your role in the performance of preventive maintenance services is:

a. Before you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your before (B) PMCS.

b. While you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your during (D) PMCS.

c. After you operate. Be sure to perform your after (A) PMCS.

d. If your equipment fails to operate. Troubleshoot with proper equipment. Report any deficiencies using the proper forms. See TM 38-750.

2-5. General Procedures.

a. General. The general procedures in this paragraph apply to preventive maintenance checks and services.

b. Procedures.

(1) Inspect to see if items are in good condition, correctly assembled or stowed, secure, not excessively worn, not leaking, and are properly lubricated.

(2) Perform work according to instructions contained in this manual. If instructions are not in this manual, notify organizational maintenance personnel.

(3) When bulldozer is not in use, exercise all mechanisms at frequent intervals.

(4) Use drycleaning solvent (PD-680) to clean grease or oil from all metal parts except those exposed to powder fouling during firing. This solvent will not readily

dissolve corrosive salts from powder and primer compositions.

(5) Do not use any coarser material than crocus cloth to remove rust from metal parts. Be careful not to change dimensions of parts when using crocus cloth for cleaning. Coat unprotected metal surfaces with oil (.MIL-L-3150) after cleaning.

(6) When authorized to install new parts, remove preservative materials (rust-preventive compound, grease).

(7) Nameplate, caution plates, and instruction plates made of steel may rust very rapidly. When they are found to be in rusty condition, thoroughly clean and coat with preservative oil (MIL-L-3150).

(8) The following cleaning and operation precautions shall be observed to prevent injury to personnel and damage to equipment:

WARNING

Always wear rubber gloves to protect hands from the skin drying effect of strong cleaning solvents.

WARNING

Drycleaning solvent is flammable and should not be used near an open flame. Fire extinguishers should be provided nearby when solvent is used. Use solvents only in well-ventilated areas.

CAUTION

Do not use drycleaning solvent on rubber parts.

CAUTION

The use of diesel fuel oil, gasoline, benzene (benzol), or mineral spirits paint thinner for cleaning is prohibited.

2-8 Change

c. *Leakage Definitions for Crew/ Operator PMCS.*

CLASS I	Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
CLASS II	Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.
CLASS III	Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

given to the fluid capacity in the item/system being checked/inspected. When in doubt, notify your supervisor.

When operating with Class I or II leaks, continue to check fluid levels as required in your PMCS.

Class III leaks should be reported to your supervisor or to organizational maintenance for corrective action.

CAUTION

Equipment operation is allowable with minor leakages (Class I or II). Of course, consideration must be

2-6. Specific Procedures.

a. Preventive maintenance checks and services to be performed daily each time bulldozer is operated are listed in table 2-1.

b. Refer to TM 38-750 for recording of malfunctions.

Table 2-1. Operator/Crew Preventive Maintenance Checks and Services.

NOTE: Within designated interval, these checks are to be performed in the order listed.

B - Before
D - During

A - After
W - Weekly

M - Monthly

Item No.	Interval					Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M			
1	•					RESERVOIR	<p><u>CAUTION</u> Before, during, and after operation check for evidence of oil leaks, for loose or missing bolts, nuts, clamps, and other hardware, and for unusual noises.</p> <p><u>CAUTION</u> Oil in reservoir must be maintained at proper level for satisfactory performance of hydraulic pump.</p> <p>Check oil in reservoir. Fill to FULL mark on dipstick (fig 3-1).</p>	Class m oil leak.

Table 2-1. Operator/Crew Preventive Maintenance Checks and Services-Continued

NOTE: Within designated interval, these checks are to be performed in the order listed.

B - Before
D - DuringA - After
W - Weekly

M - Monthly

Item No.	Interval					Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment will be reported Not Ready (Red) if:
	B	D	A	W	M			
2	•	•				BLADE ASSY MANUAL CONTROL LEVER	Check blade assembly manual control lever for free operation. With tank engine idling, place hydraulic pump switch in ON position. Disengage carrying hooks and operate control lever. Check that blade assembly responds correctly to movement of the control lever.	Blade assembly will not respond to movement of control lever.
3			•			HEADLAMP ADAPTERS	Inspect headlamp adapters for damage and locknuts for tightness.	
4		•				MOLDBOARD CARRYING HOOKS AND HANDLE	Check that moldboard carrying hooks are not cracked or broken. Check that carrying hooks operating handle is not bent or broken.	
5			•			HYDRAULIC CYLINDERS	Check in area of left and right hydraulic cylinders for oil leaks. Check that cylinder rod is not bent or broken.	Class III oil leak. Cylinder rod bent or broken.
6			•			TILT ARMS	Check that left and right tilt arms are not cracked or broken.	
7			•			PUSHBEAMS	Check that left and right pushbeams are not cracked or broken.	
8			•			MOLDBOARD BLADE	Check moldboard for cracks and loose or missing hardware.	
9			•			MOLDBOARD CUTTING EDGE	Check cutting edge for cracks, breaks and missing hardware	Cutting edge cracked or broken.
10					•	EMERGENCY LIFT CABLES	Check for kinked, frayed, broken, or missing lift cable. Check cable for loose or missing hardware.	

Section III. OPERATION UNDER UNUSUAL CONDITIONS

2-7. General Conditions

a. In addition to the normal preventive maintenance checks and services, special care in cleaning and lubrication must be observed where extreme temperature, humidity, and terrain conditions are present or anticipated. Properly cleaned and lubricated equipment insures proper operation and guards against excessive wear of working parts.

b. Refer to table 2-1 for preventive maintenance checks to be performed.

c. When chronic failure of equipment results from subjection to extreme conditions, failure(s) should be reported using Form SF368.

2-8. Extreme Cold Weather.

a. Extensive preparation of equipment scheduled for operation in extreme cold is necessary. Generally, extreme cold will cause lubricants to thicken, and batteries to freeze or furnish less current than needed for cold-weather starting. Extreme cold can crack insulation and cause electrical short circuits, prevent fuel from vaporizing and properly combining with air to form a combustible mixture for starting. It will also cause M9 bulldozer components to become hard, brittle, and more likely to break.

b. M9 bulldozers scheduled for extreme cold operation must be checked for proper lubrication. If lubrication is required, refer to lubrication instructions (fig 3-1).

c. Always be alert for indications of the effect of cold weather on equipment.

d. Caution must be taken when placing the vehicle in motion after a shutdown. Thickened lubricants may cause failure of parts. After engine has been thoroughly warmed up, drive vehicle slowly about 100 yards to heat lubricants to a point where normal operation can be expected.

2-9. At Halt or Parking (Extreme Cold Weather)

a. When halted for short shutdown periods, park vehicle in a sheltered spot out of the wind. If no shelter is available, park so that front of vehicle faces into wind. This prevents rain, snow, and sleet from entering engine compartment through rear grille doors.

b. When shut down for a long period, and high dry ground is not available, park vehicle on a footing of planks or brush. Place bulldozer in out-of-operation condition to prevent possible freezing in an engaged position.

c. Clean mud, snow, and ice from vehicle after operation.

2-10. At Halt or Parking (Extreme Hot Weather).

a. Do not park vehicle in the sun for long periods. When practical, park vehicle under cover to protect it from sun, sand, and dust.

b. Cover inactive vehicle with tarps if no other suitable shelter is available.

c. Vehicles inactive for long periods in hot humid weather are subject to rapid rusting and accumulation of fungus growth. Make frequent inspections, clean and lubricate as prescribed in lubrication instructions (fig 4-1) to prevent excessive deterioration.

2-11. Operation in Hot, Humid, or Salty Areas.

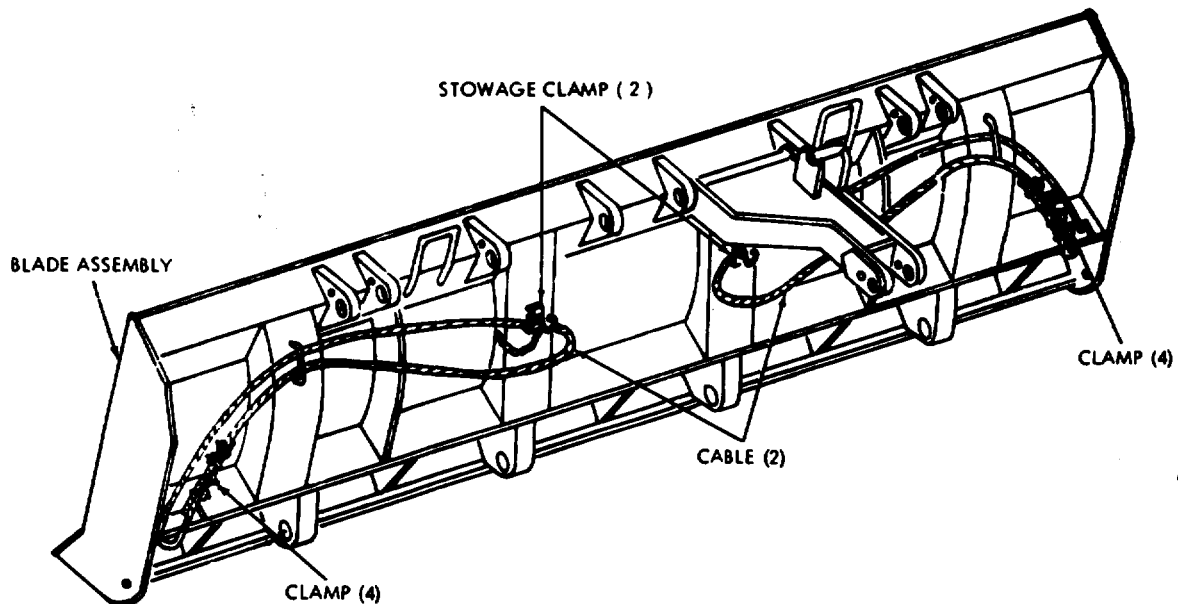
Inspect vehicle frequently for moisture or corrosion and accumulation of fungus growth. Dry all exposed unpainted surfaces and lubricate as prescribed in lubrication instructions (fig 4-1) at frequent intervals.

2-12. Blade Emergency Lifting. Two emergency lifting cables are used to raise the blade assembly when the hydraulic system is inoperative (fig 2-7).

- a. Open stowage clamps and detach free loop of cable (view A).
- b. Secure free loop of each cable around a track end connector located at a point on top of compensating idler wheel (view B).
- c. Place blade assembly manual control lever in F (float) position (view C).
- d. Move vehicle slowly in reverse until blade assembly is fully elevated.
- e. Engage carrying hooks (view D), drive vehicle forward slightly, remove cables from track and connectors, and place cables in stowed position (fig 2-7).

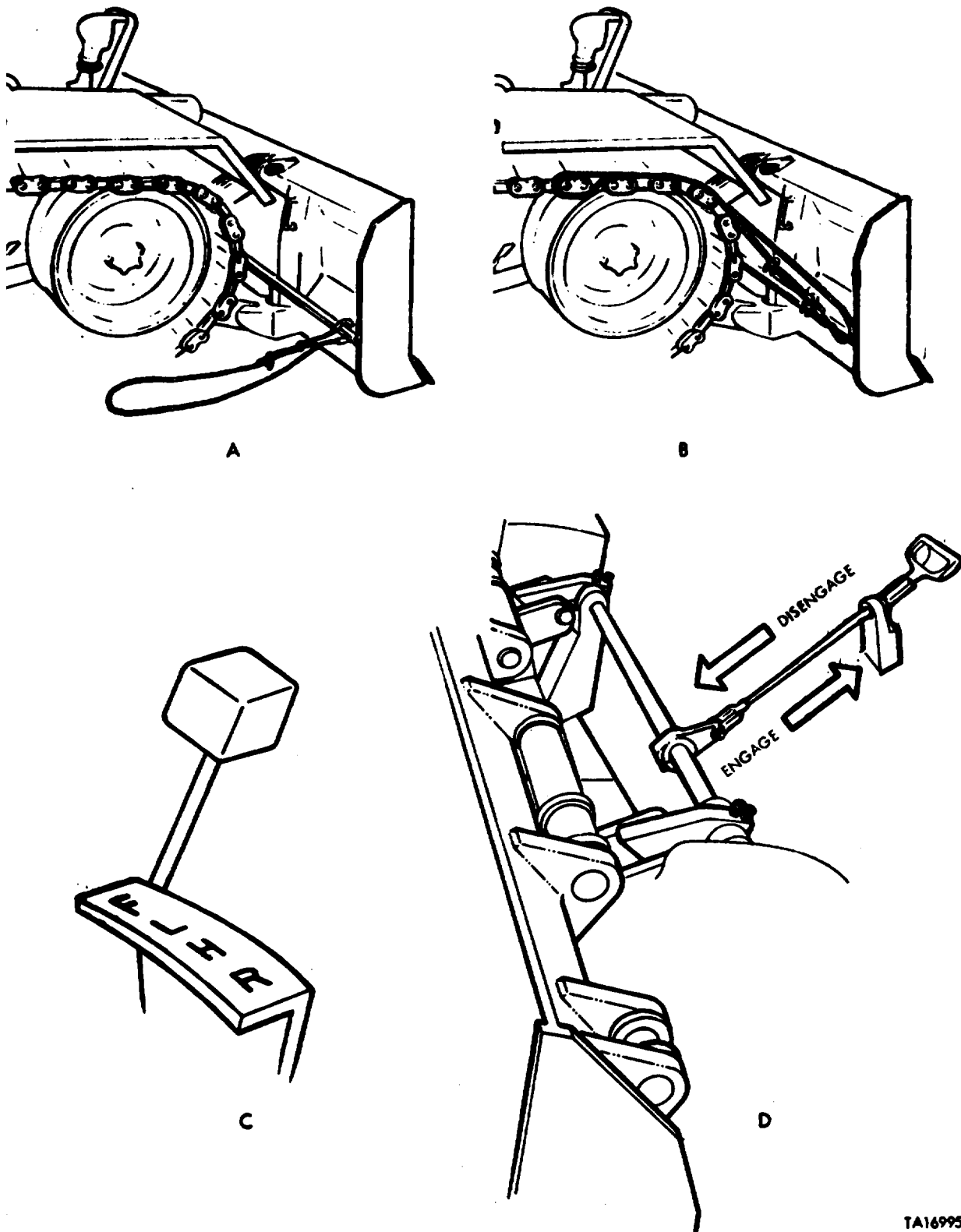
NOTE

If blade assembly of an inoperable tank is in lowered position, install blade assembly emergency lift cables (fig 2-8). Attach towing cables to rear of disabled tank and tow tank rearward until blade assembly is raised sufficiently to engage blade assembly carrying hooks. When blade assembly is secured, disconnect towing cables, and Stow emergency lift cables on blade assembly.



TA169954

Figure 2-7. Emergency lifting cables - stowed on blade assembly.



TA169955

Figure 2-8. Emergency lifting procedures.

CHAPTER 3

OPERATOR/CREW MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

3-1. General The lubrication instructions contained in this section relate only to the M9 bulldozer. Any special lubrication instructions required for specific mechanisms or parts during installation or repair are prescribed in the appropriate sections of this manual.

Reduce intervals to compensate for abnormal operation and severe conditions or contaminated lubricants.

3-3. Lubrication Guide. The lubrication guide (fig 3-1) prescribes lubrication procedures, intervals, and proper lubricants to be used.

3-2. Service Intervals. Service intervals specified in the lubrication instructions are for normal operation.

Section II. TROUBLESHOOTING

3-4. General.

a. This section contains operator troubleshooting information (table 3-1) for locating and correcting operating troubles which may develop. Each malfunction is followed by a list of tests or inspections which will help determine probable causes and corrective actions. The test/inspection and corrective actions should be performed in the order listed.

that may occur, or all tests or inspections and corrective actions. If a malfunction is not listed (except when malfunction and cause are obvious), or is not corrected by listed corrective action, notify organizational maintenance personnel.

NOTE

Before you use the troubleshooting table, be sure you have performed all normal operating checks.

b. This table cannot list all possible malfunctions

Table 3-1. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
-------------	--------------------	-------------------

BLADE ASSEMBLY

1. BLADE ASSEMBLY FAILS TO MAINTAIN DESIRED H (HOLD) POSITION AND RESPONDS SLUGGISHLY TO CONTROL WHEN BEING RAISED OR LOWERED.

Check level of oil in hydraulic reservoir (fig 3-1). Replenish as required.

Table 3-1. Troubleshooting - Continued

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

2. BLADE ASSEMBLY FAILS TO RAISE HIGH ENOUGH TO ENGAGE CARRYING HOOKS.

Step 1. Check linkage at front of vehicle for interference caused by dirt or rocks wedged between moving parts.

Remove any interfering material.

Step 2. Check level of oil in hydraulic reservoir (fig 3-1).

Replenish as required.

3. BLADE ASSEMBLY FAILS TO LOWER WHEN CONTROL VALVE LEVER IS IN THE L (LOWER) POSITION.

Step 1. Check that carrying hooks are completely disengaged. If not, push release handle forward until carrying hooks are fully disengaged.

Step 2. Check if any debris or obstacles prevent blade assembly downward motion.

Remove any debris and/or obstacles.

4. BLADE ASSEMBLY FAILS TO DIG PROPERLY.

Step 1. Inspect cutting edge for looseness.

Tighten attaching bolts if required.

Step 2. Check if cutting edge is excessively worn.

Notify organizational maintenance to replace or reverse cutting edge.

5. BLADE ASSEMBLY FAILS TO OPERATE.

Step 1. Check that HYDRAULIC PUMP switch is in ON position.

Place in ON position.

Step 2. Check that hydraulic pump indicator is illuminated.

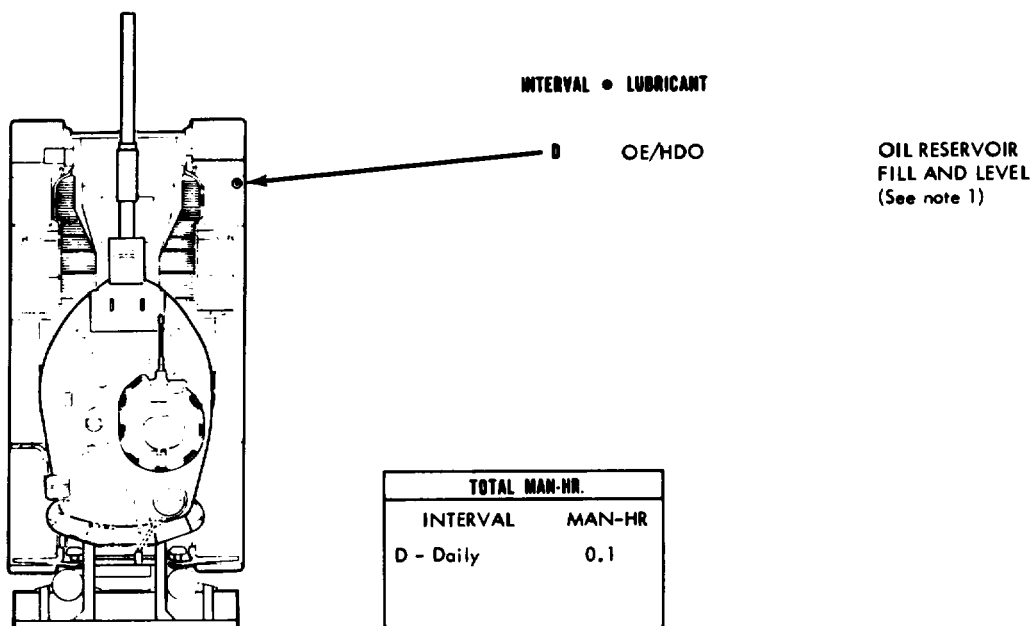
Replace indicator lamp. If replacement indicator lamp fails to light with HYDRAULIC PUMP switch ON, notify organizational maintenance.

OPERATOR/CREW LUBRICATION GUIDE **BULLDOZER, EARTH MOVING: TANK MOUNTING M9**

Intervals and the related manhour times are based on normal operation. The manhour time specified is the time required to perform all services prescribed for a particular interval. The interval shall be changed to compensate for abnormal operation and severe operating conditions or contaminated

lubricants. The interval may be extended during periods of low level activity, commensurate with adequate preservation precautions.

Park vehicle on level ground to check oil levels.



KEY			
LUBRICANTS/COMPONENTS	EXPECTED TEMPERATURES		
	Above +32°F.	+40°F. to -10°F.	0°F. to -65°F.
OE/HDO - OIL, ENGINE HEAVY DUTY MIL-L-2104			
OEA-OIL, ENGINE ARCTIC MIL-L-46167			
RESERVOIR	OE/HDO-IO	OE/HDO-IO	OEA

For Arctic Operation
Refer to FM9-207

NOTES:

RESERVOIR. Check oil daily, before operation of blade assembly. With blade assembly in raised position, check the dip stick. Fill reservoir to FULL mark on dip stick. When replenishing the entire system the pump must be operating at idle speed. The hydraulic system contains approximately 25 gals. Raise and lower the blade assembly several times to purge the system of air, then recheck oil level.

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Figure 3-1. Operator/crew lubrication guide.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

4-1. General. The lubrication instructions contained in this section pertain only to the M9 bulldozer. Any special lubrication instructions required for specific mechanisms or parts are prescribed in the appropriate sections of this manual.

4-2. Service Intervals. Service intervals specified in the lubrication instructions are for normal operating and where

moderate temperature, humidity, and atmospheric conditions exist. Reduce intervals to compensate for abnormal operation and severe conditions or contaminated lubricants.

4-3. Lubrication Guide. The lubrication guide (fig 4-1) prescribes cleaning and lubrication procedures, lubrication points, intervals, and proper lubricants to be used for the M9 bulldozer.

Section II. ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-4. General

a. The Preventive Maintenance Checks and Services (PMCS) provide comprehensive checks to insure trouble-free operation of bulldozer until next scheduled PMCS.

b. Prior to performing the PMCS, maintenance personnel should read the complete set of checks and services (table 4-1).

c. If your equipment fails to operate, troubleshoot with proper equipment. Report any deficiencies using the proper forms. See TM 38-750.

d. To insure complete maintenance of the bulldozer during its useful life, many procedures that are normal crew functions are also included in the PMCS. DA Form 2404, Equipment Inspection and Maintenance Work Sheet, is utilized by maintenance personnel to record inspections and services performed, faults corrected, and faults beyond the skills of the assigned maintenance personnel to correct. The item number recorded on DA Form 2404 must correspond

to the sequence number appearing in the appropriate PMCS (table 4-1).

4-5. Intervals.

a. Normal Conditions. Scheduled preventive maintenance services are normally performed at the intervals defined below:

* Quarterly	-	or 750 miles
* Semiannually	-	or 1500 miles
* Annually	-	or 3000 miles

b. Adverse Conditions. Operation of the vehicle under adverse conditions may require that PMCS's be performed at more frequent intervals. Commanders are authorized to reduce scheduled intervals whenever the need is justified.

c. Special Conditions. When combat or environmental conditions make it difficult to complete required PMCS on bulldozer at one time, they can be handled in sections. However, all services should be completed within the week.

ORGANIZATIONAL MAINTENANCE LUBRICATION GUIDE BULLDOZER, EARTH MOVING: TANK MOUNTING M9

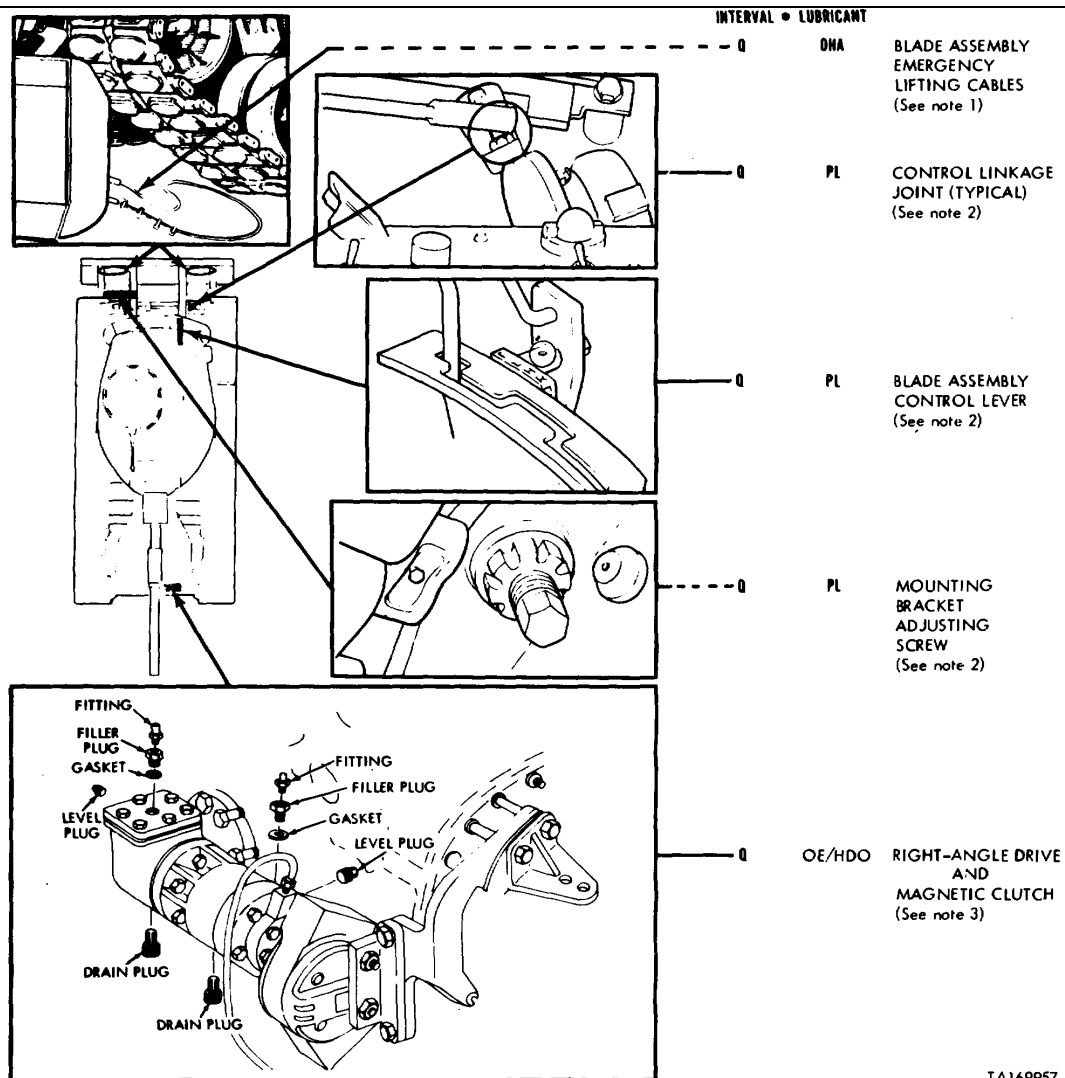
Intervals and the related manhour times are based on normal operation. The manhour time specified is the time required to perform all services prescribed for a particular interval. The interval shall be changed to compensate for abnormal operation and severe operating conditions or contaminated lubricants. The interval may be extended during periods of low level activity, commensurate with adequate preservation precautions.

Park vehicle on level ground to check oil levels.

Clean fittings before and after lubricating with a dry, lint-free cloth.

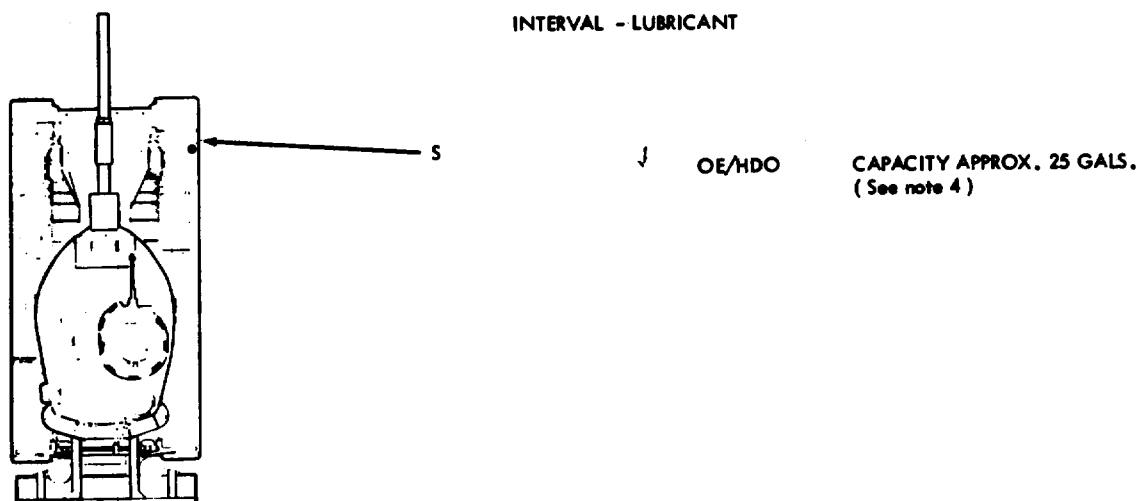
Lubricate points indicated by dotted arrow shafts on both sides of vehicle.

Lubricate all items found contaminated after fording or washing.



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Figure 4-1. Organizational maintenance lubrication guide (sheet 1 of 2).



KEY

REF

LUBRICANTS/COMPONENTS	EXPECTED TEMPERATURES			TOTAL MAN-HR.
	Above +32°F	+40°F to -10°F	0°F to -65°F	
OE/HDO - OIL, ENGINE, HEAVY DUTY MIL-L-2104				Q - Quarterly/ 750 miles 0.2
OEA - OIL, ENGINE, ARCTIC MIL - L - 46167				S - Semiannually/ 1500 miles 0.3
RIGHT-ANGLE DRIVE AND MAGNETIC CLUTCH	OE/HDO - IO	OE/HDO - IO	OEA	
PL-M - OIL, LUBRICATING, PRESERVATIVE MIL-L-3150				
PL-S - OIL, LUBRICATING GENERAL PURPOSE, VV-L-800				
CONTROL LINKAGE JOINT (TYPICAL)	PL-M	PL-S	PL-S	
BLADE ASSEMBLY CONTROL LEVER				
MOUNTING BRACKET ADJUSTING SCREW				

For Arctic Operation refer to FM9-207

NOTES:

1. **BLADE ASSEMBLY EMERGENCY LIFTING CABLES.** Clean cables with Drycleaning Solvent (SD-2) P-D-680, and coat with Corrosion Preventive Compound (OHA) MIL-C-16173 (Grade 1).
2. **OIL CAN POINTS.** Quarterly lubricate control linkage joints, blade assembly control lever, and mounting bracket adjusting screws.
3. **RIGHT-ANGLE DRIVE AND MAGNETIC CLUTCH.** Fill to level of plug located on side of power takeoff assembly and magnetic clutch housings. Check oil levels quarterly by removing plugs and filling to plug level. Drain semiannually, and only after operation by removing drain plug on bottom of power takeoff assembly and magnetic clutch housings. Refill to proper levels.
4. **RESERVOIR.** When draining oil reservoir, remove drain plug located on the side of the reservoir. Catch drain oil in a suitable container and dispose. Remove reservoir cover and inspect filters. If necessary, remove reservoir manifold and clean filters and reservoir. To complete draining of hydraulic system, place container under slip joints and remove plugs. Drain and refill semiannually or every 1500 miles of vehicle operation, whichever comes first.

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Figure 4-1. Organizational maintenance lubrication guide (sheet 2 of 2).

4-6. General Procedure.

a. Vehicle Cleanliness. The vehicle with bulldozer should be presented to maintenance personnel clean and dry, and not covered and caked with mud to hamper inspections, checks, and services.

b. Crew Participation. The crew may assist in the performance of organizational preventive maintenance checks and services.

c. Inspection and Road Tests. Since the tank crew is often unaware of malfunctions that have developed gradually during the operation of the bulldozer, it is desirable to have the organizational maintenance personnel conduct the road test portions of the PMCS. Any repairs or adjustments necessary to insure safe operation should be made. And defects found during PMCS road test should be corrected later, during after-road-test services. When tactical situation does not permit a complete road test, perform only

those items that require little or no movement of the vehicle. When a road test can be performed, distance covered should be at least three miles. Perform before-operation service in accordance with Chapter 2.

d. Modification Work Order (MWO) Application. Incorporate authorized MWO's in conjunction with PMCS, but prior to affected system or item checks and services. Enter any modification made during the PMCS on DA Form 2408-5. No alteration or modification will be made except as authorized by official publication.

e. Inspection and Checks. Inspections, services, and operational checks are designed to prevent abnormal conditions and deterioration of components. Correct all defects which are found. Tighten any loose components. Clean and lubricate all dirty, corroded or rusty parts. Refer to Leakage Definition Chart (para 2-5(c)) for any leaks which are found.

Table 4-1. Organizational Preventive Maintenance Checks and Services Quarterly Schedule

Item No	Item To Be Inspected	Procedures
1	Emergency Lift Cable	Lubricate in accordance with lubrication guide figure 4-1. Inspect for damage and proper operation. Examine cable assemblies for frayed and/or loose connections.
2	Tilt Arm	Inspect tilt arm pins, screws, lockwashers, and locks for security and/or damage.
3	Blade Assy Carrying Hooks	Inspect hooks, shafts, arm, and handle for wear and/or distortion.
4	Blade Assy and Pushbeams	Inspect for distortion that could damage pins, screws, lockwashers, and locks.
5	Blade Assy Mounting Brackets	Inspect mounting pins for security and damage.
6 cylinders	Hydraulic Cylinder and Assemblies	Inspect piston rod for scoring or distortion. Inspect for leakage; inspect for tightness of cylinder packing gland guard assemblies, and trunnion caps.

Table 4-1. Organizational Preventive Maintenance Checks and Services Quarterly Schedule

Item No	Item To Be Inspected	Procedures
7	Tubing, Hoses, and Fittings	Inspect all tubing and hoses for cracks, dry brittle conditions, missing or damaged parts Inspect all fittings for leaks.
8	Reservoir	<p>Check oil level. Check lines and fittings for leaks. At oil change, inspect filters for evidence of restriction. Refer to para 4-61 for cover removal. Refer to para 4-63 for filter removal. Clean filters as necessary with dry-cleaning solvent (PD-680).</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Oil in reservoir must be maintained at proper level for satisfactory performance of the pump.</p>
9	Right-Angle Drive Power Takeoff Assembly	<p>Operate blade assembly to determine that magnetic clutch is operating.</p> <p style="text-align: center;"><u>NOTE</u></p> <p>If operation of blade assembly is slow or jerky, check oil level in reservoir and refill if necessary.</p>
10	Pump	Inspect pump for leaks, loose mounting, loose connections and signs of physical damage. Check for signs of overheating (cracked, blistered, or discolored paint).
11	Magnetic Clutch	Inspect for loose electrical connector Check oil level in magnetic clutch.
12	Blade Assembly Manual Control Lever	Check blade assembly control lever for free operation. Check that blade assembly raises, lowers, and holds in response to position of control lever.

Section III. MAINTNANCE OF HEADLAMP ADAPTER

4-7. Description. Headlamp adapters are mounted to vehicle headlamp receptacles to raise the headlamps, permitting illumination when the M9 bulldozer blade is in the raised position. Two guards protect the headlamps from brush or debris damage.

NOTE

Procedures for left side and right side are the same.

4-8. Removal (Fig 4-2).

a. Remove two bolts, lockwashers, wingnuts, washers, and cotter pins securing headlamp guard to support and support assembly. Remove headlamp guard.

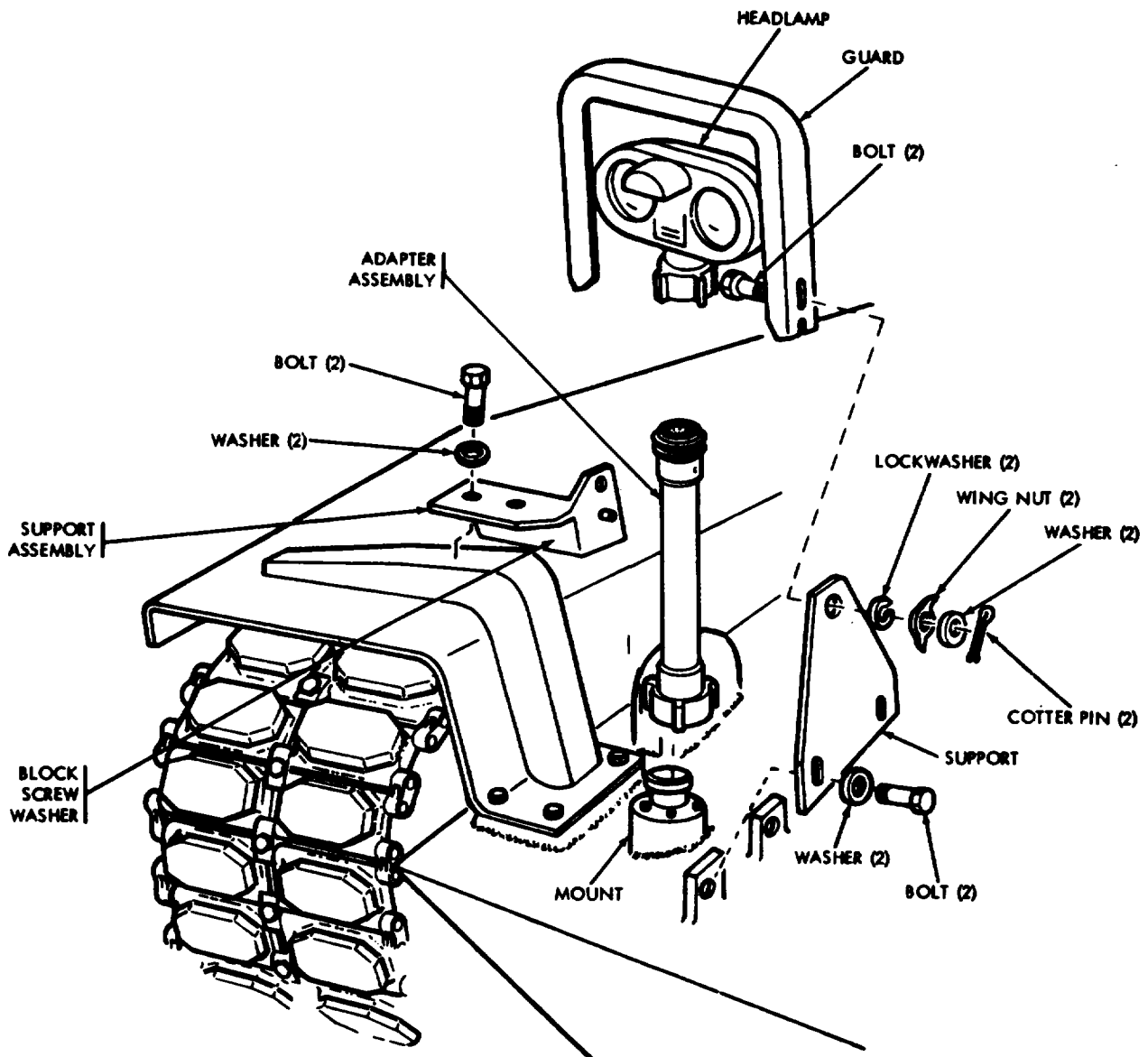
b. Remove two bolts and washers securing support to mounting brackets, and remove support.

c. Remove two bolts and washers securing support assembly to fender, and remove support assembly.

d. Remove screw and washer securing block to support assembly. These parts are used on vehicles with serial numbers 3340 and up only.

e. Disconnect headlamp from adapter assembly.

f. Disconnect adapter assembly from headlamp mount.



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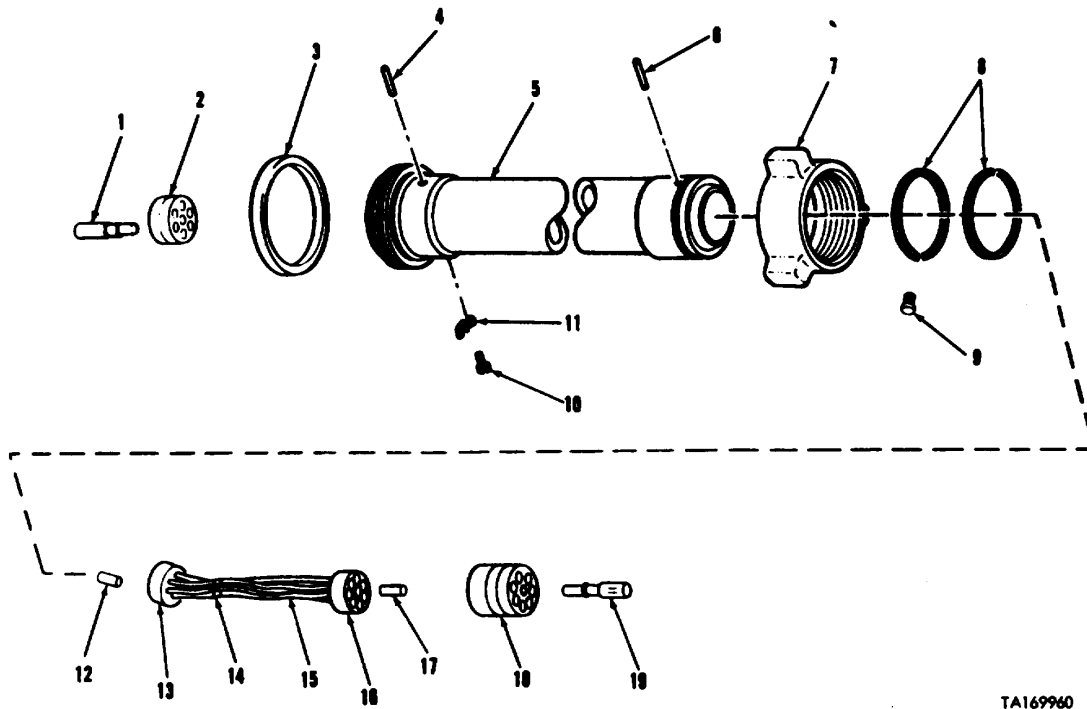
Figure 4-2. Removal or installation of headlamp adapter.

4-9. Inspection. Inspect assemblies/parts for wear and/or damage. If repair is required, continue with the following procedures.

4-10. Disassembly (Fig 4-3)

- a. Turn adapter assembly with base down.
- b. Remove seven contacts (1) and insert (2) from adapter assembly (5).

- c. Remove gasket (3) from adapter assembly (5).
- d. Remove pin (4) from adapter assembly (5).
- e. Remove rivet (9) securing nut (7), and remove nut and two rings (8).
- f. Remove pin (6) from adapter assembly (5).



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Figure 4-3. Disassembly or assembly of headlamp adapter.

Legend for figure 4-3:

- | | | | |
|-------------------|--------------|-----------------|--------------------|
| 1 - Contact (7) | 6 - Pin | 11 - Clip | 16 - Grommet |
| 2 - Insert | 7 - Nut | 12 - Rod | 17 - Rod |
| 3 - Gasket | 8 - Ring (2) | 13 - Grommet | 18 - Insert |
| 4 - Pin | 9 - Rivet | 14 - Marker (7) | 19 - Connector (7) |
| 5 - Adapter assy. | 10 - Screw | 15 - Cable | |

g. Remove two screws with lockwashers (10) securing clip (11) to adapter assembly (5), and remove clip.

h. Remove seven connectors (19) from insert (18), and remove insert.

i. Remove rods (12 and 17) from grommets (13 and 16), and remove grommets from cable wire (15).

j. Remove seven markers (14) from cable (15).

4-11. Assembly (Fig 4-3).

a. Install seven markers (14) to cable (15).

b. Install grommets (13 and 16) to cable (15), and secure with rods (12 and 17).

c. Install insert (18) on cable (15) and secure with seven connectors (19).

d. Install clip (11) to adapter assembly (5), and secure with two screws with lockwashers (10).

e. Install pin (4) to adapter assembly (5).

f. Install nut (7) and two rings (8) to adapter assembly (5), and secure with pin (6).

g. Install rivet (9) to adapter assembly (5).

h. Install gasket (3) to adapter assembly (5).

i. Install insert (2) to adapter assembly (5), and secure with seven contacts (1).

4-12. Installation (Fig 4-2).

a. Connect adapter assembly to headlamp mount.

b. Connect headlamp to adapter assembly.

c. For vehicles with serial numbers 3340 and up, install block to support assembly, and secure with screw and washer.

d. Install support assembly to fender, and secure with two bolts and washers.

e. Install support to mounting brackets, and secure with two bolts and washers.

f. Install headlamp guard to support and support assembly, and secure with two bolts, lockwashers, wingnuts, washers, and cotter pins.

Section IV. Maintenance of Blade Assembly

4-13. Description. The front mounting brackets and blade assembly consist of heavyduty moldboard and cutting edge supported by linkage attached to mounting brackets located on the front lower slope of the vehicle hull. The linkage is composed of two pushbeams (left and right) and four tilt arms (left and right outboard and left and right inboard). Up-and-down motion of the blade assembly is accomplished by two hydraulically operated double-acting cylinder and ram assemblies. The ram ends are connected by pivot pins to the pushbeams.

4-14. Removal (Fig 4-4).

a. Place vehicle on level terrain and lock parking brake.

b. Attach hoisting device to lifting eyes on top of blade assembly (view A).

c. Raise blade assembly to stowed position and engage carrying hooks.

d. Remove lower two screws and lockwashers securing left and right outer tilt arm retaining caps to mounting brackets (view B).

- e. Lower blade assembly to float position.
- f. Remove the upper two screws and lockwashers securing left and right outer tilt arm retaining caps to mounting brackets (view B).
- g. Remove left and right outer tilt arm retaining caps (view B).
- h. Remove outer tilt arm from hull mounting bracket (view B).
- i. Insert crowbar and use as lever to support weight of inner tilt arm (left and right) (view C).
- j. Remove screws, lockwashers, locks, and pins securing inner tilt arms (left and right) to hull mounting brackets (view C).
- k. Release leverage on crowbar, and lower inner tilt arms to rest on rear of blade assembly (view C).
- l. Raise bottom edge of blade assembly with rams or jacks, while maintaining slack in hoist chains and tilt blade assembly face toward ground. When maximum tilt is obtained, lower rams until bottom edge of blade assembly rests on ground. Remove slack in hoist chain.
- m. Remove screws and lockwashers securing ram arm locks (left and right) (view D).
- n. Remove ram arm pins (left and right) (view D).

NOTE

Lift with hoist as necessary to allow removal of pins. Raise ram arms with hoist to clear pushbeam well and tie arms in raised position.

- o. Remove screws, lockwashers, locks, and pins securing left and right pushbeams to mounting brackets (view E).

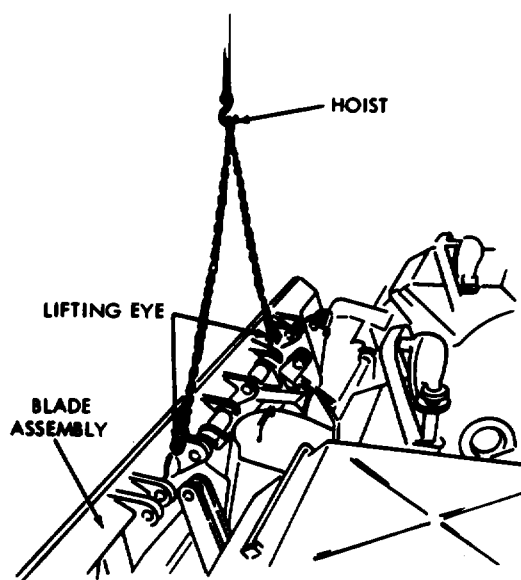
- p. Lift with hoist until pushbeam connecting ends are clear of mounting brackets (view E).
- q. Back vehicle away from blade assembly.
- r. Lower hoist until blade assembly is resting on ground.
- s. Fold pushbeams over back of blade assembly.
- t. Remove hoist chain.

4-15. Disassembly (Fig 4-5). Remove screws, lockwashers, locks, and pins securing outer tilt arms, inner tilt arms, and pushbeams to blade assembly.

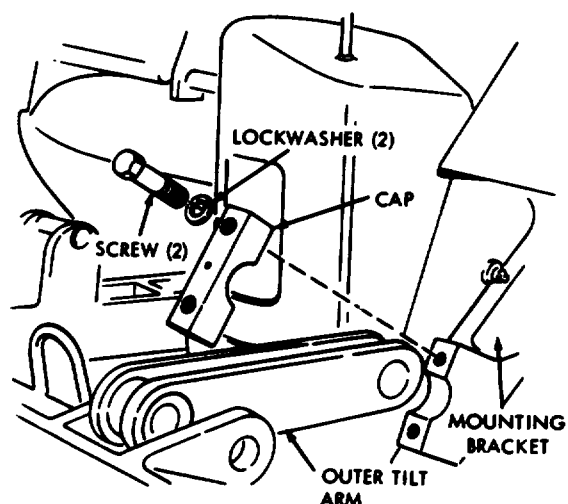
4-16. Assembly (Fig 4-5). Position outer tilt arms, inner tilt arms, and pushbeams to blade assembly, and secure with screws, lockwashers, locks and pins.

4-17. Installation (Fig 4-5)

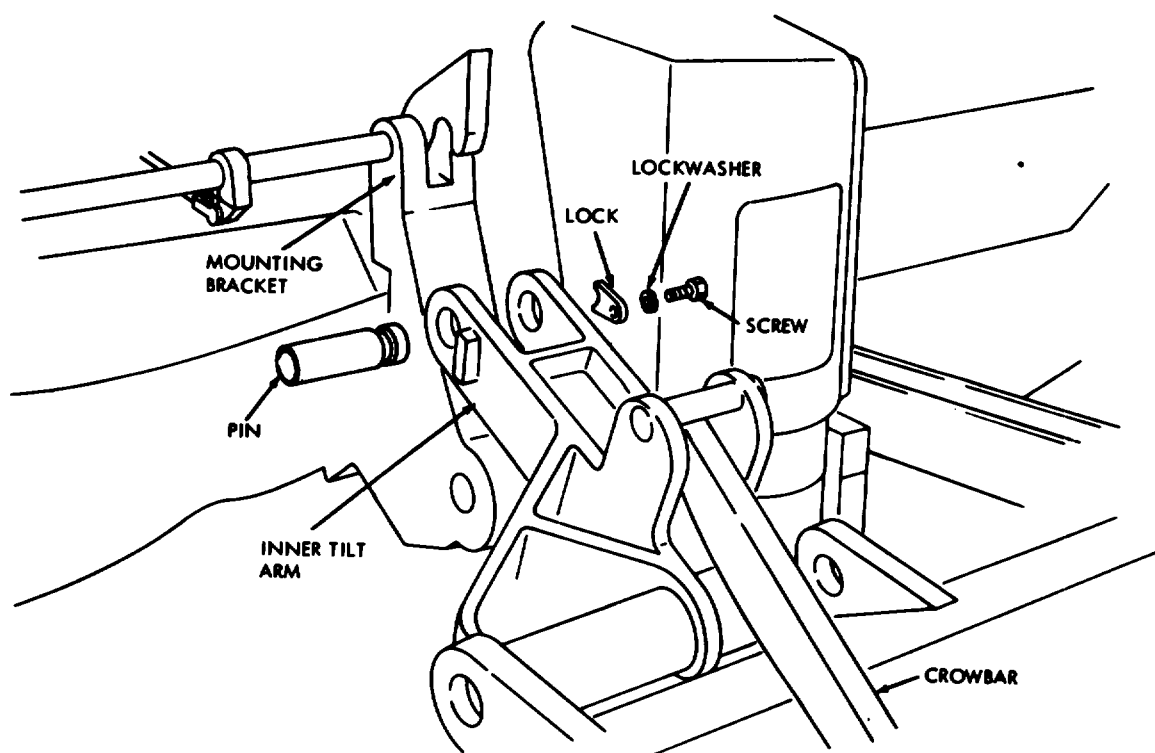
- a. Place blade assembly on ground, face down with cutting edge towards and parallel to the front of the vehicle.
- b. Attach hoist chains to lifting eyes on top of blade assembly.
- c. Unfold pushbeams until extended toward vehicle.
- d. Lift with chain hoist until connecting ends of pushbeams are positioned at the same height from ground as mounting brackets on hull.
- e. Move vehicle forward to position brackets in pushbeams.
- f. Install pins and secure with locks, lockwashers, and screws (view E).
- g. Install ram arm locks (left and right, and secure with screws and lockwashers (view D).



A



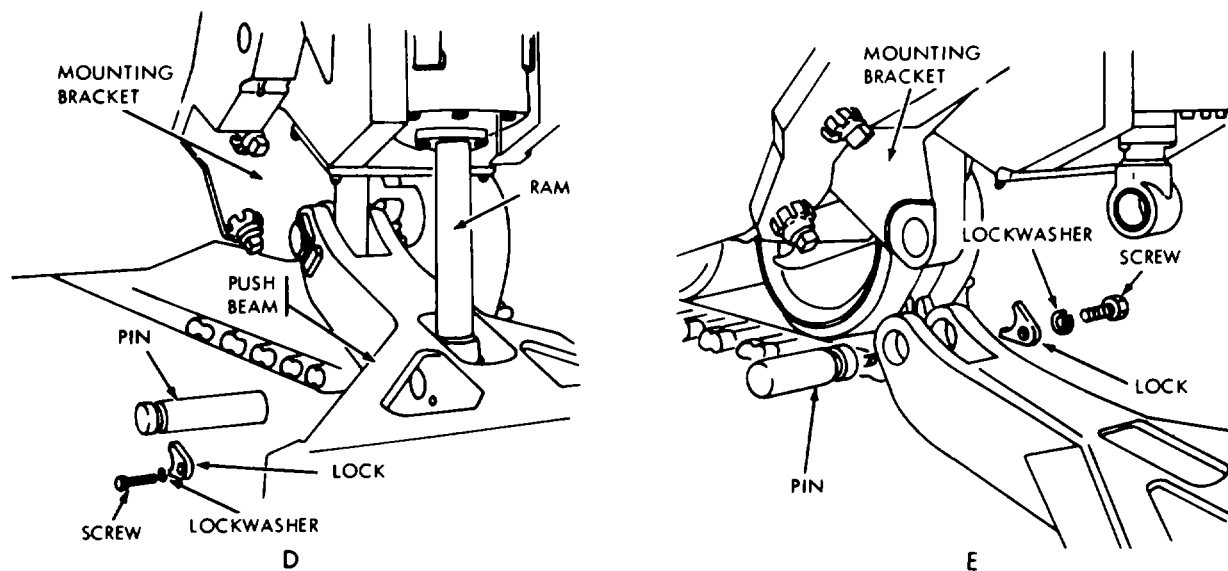
B



C

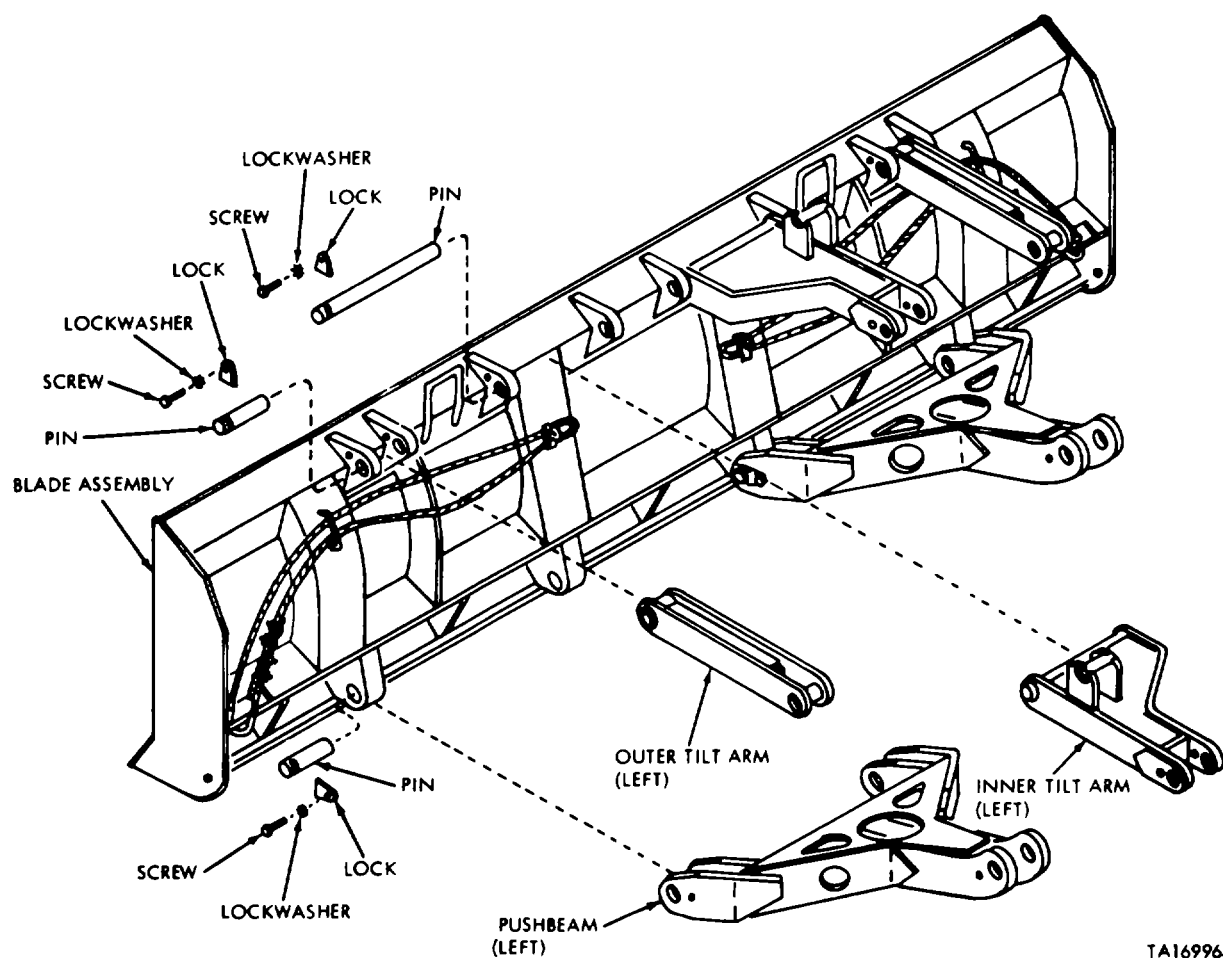
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Figure 4-4. Removal or installation of blade assembly (sheet 1 of 2).



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Figure 4-4. Removal or Installation of blade assembly (sheet 2 of 2)



TA169963

Figure 4-5. Disassembly or assembly of blade assembly.

h. Activate hydraulics and raise bottom edge of blade assembly off ground 3 to 4 inches. Using chain hoist, tilt blade assembly toward a vertical position.

i. Insert crowbar and apply leverage to raise inner tilt arms (left and right) to mounting position on hull mounting brackets (view C).

j. Install pins, locks, lockwashers, and screws (view C).

k. Position outer tilt arms in hull mounting brackets (view B).

l. Position left and right outer tilt arm retaining caps

(view B).

m. Install the upper two screws and lockwashers securing left and right outer tilt arm retaining caps to mounting bracket (view B).

n. Raise blade assembly to stowed position and engage carrying hooks.

o. Install the lower two screws and lockwashers securing left and right outer tilt arm retaining caps to mounting brackets (view B).

p. Remove hoisting chains from lifting eyes on top edge of blade assembly (view A).

Section V. MAINTENANCE OF BLADE ASSEMBLY CUTTING EDGE

4-18. Description. The blade assembly cutting edge is connected to the bottom of the moldboard. When moving earth or other debris, it digs in with a sharp clean cut and controls even distribution.

4-19. Cutting Edge.

a. General. Reverse cutting edge to increase its useable life if it becomes worn or scored.

b. Removal (Fig 4-6).

(1) Place blade assembly in stowed position (view A).

CAUTION

Insure blade assembly is secured by carrying hooks, before proceeding with removal.

NOTE

As an aid in supporting cutting edge when removing, leave bolts in each end of blade assembly until others have been removed.

(2) Remove 24 bolts, lockwashers, and nuts securing cutting edge to blade assembly (view B).

(3) Remove cutting edge.

c. Installation (Fig 4-6).

(1) Position cutting edge on blade assembly (view A).

NOTE

When installing cutting edge, position cutting edge on blade assembly and install bolts, lockwashers, and nuts in each end. This is to support weight of cutting edge and permit installation of remaining bolts.

(2) Install 24 bolts, lockwashers, and nuts securing cutting edge to blade assembly (view B).

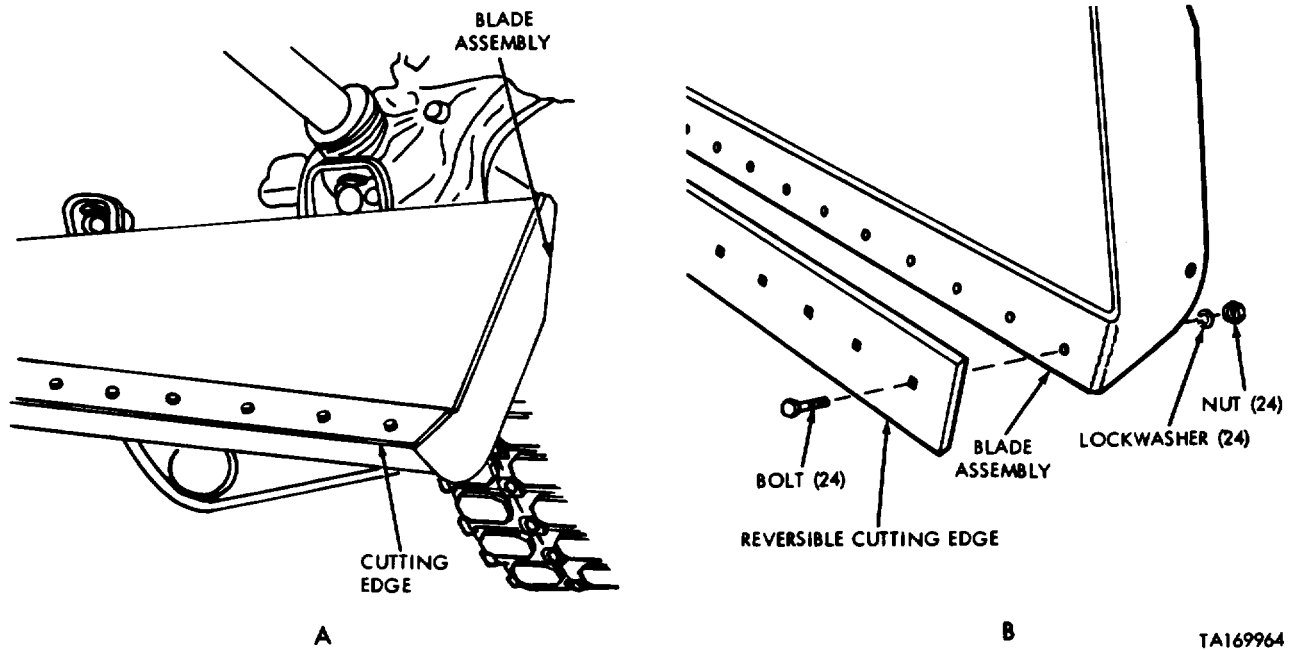


Figure 4-6. Removal or installation of cutting edge.

Section VI. MAINTENANCE OF PUSHBEAM

4-20. Description. The pushbeams are located between the vehicle and the blade assembly. The ram assembly is attached to the pushbeam. Up and down motion on the pushbeams causes the blade assembly to be raised and lowered.

4-21. Removal (Fig 4-7).

NOTE

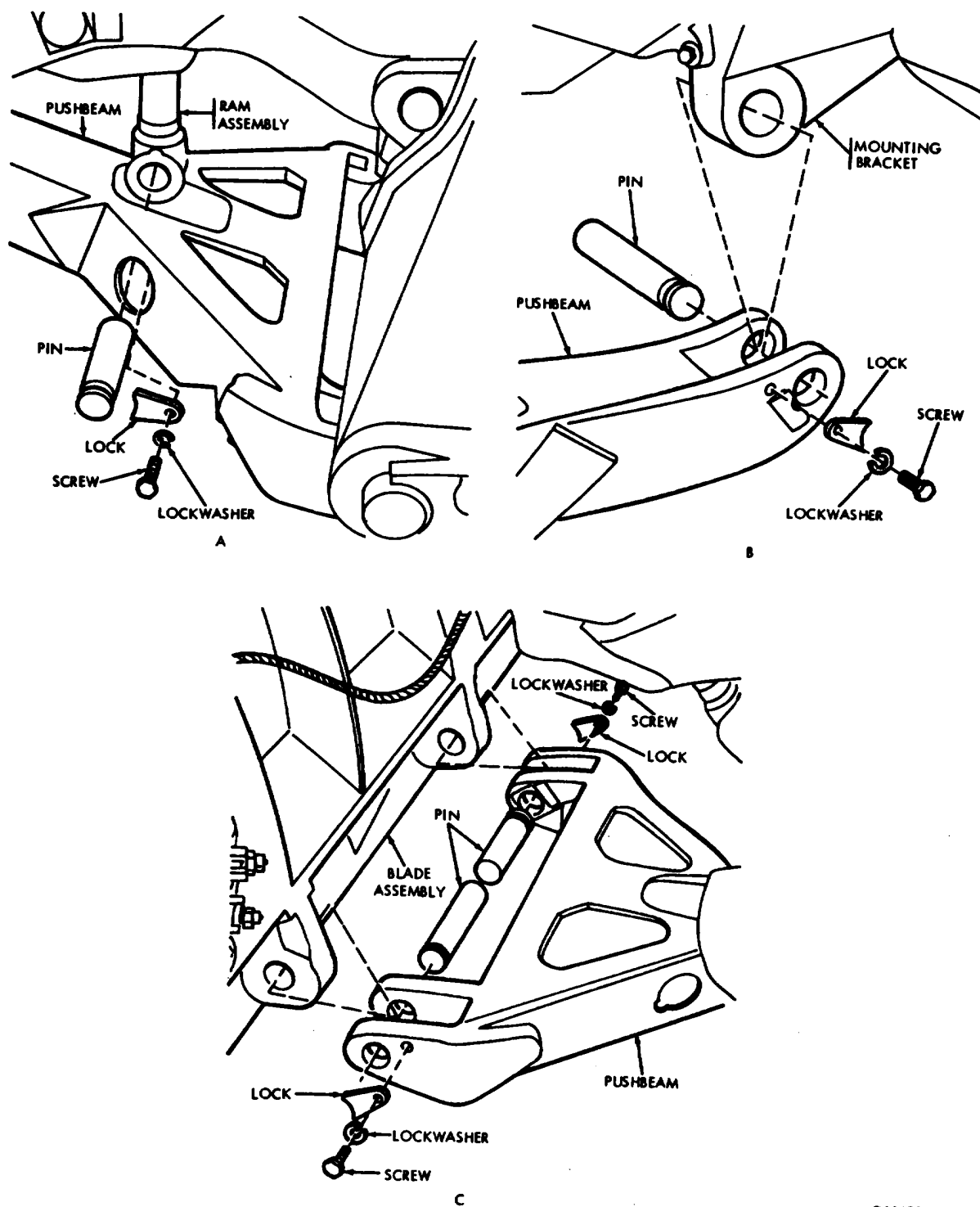
Procedures for both left and right sides are the same.

- Lower blade assembly to rest on ground.
- Remove screw, lockwasher, and lock securing pin. Remove pin securing ram assembly to pushbeam (view A).

CAUTION

Before removing pin, support weight of pushbeam with a floor jack or wood block.

- Remove screw, lockwasher, lock, and pin securing pushbeam to mounting bracket (view B).
- Install lifting device to pushbeam.
- Remove two screws, lockwashers, lock and pins securing pushbeam to blade assembly, and remove pushbeam (view C).



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Figure 4-7. Removal or installation of pushbeam assemblies.

4-22. Cleaning and Inspection.

- a. Clean all parts, including housing mating surfaces, using dry-cleaning solvent.
- b. Inspect all components for cracks or damage.
- c. Inspect machined surfaces for pitting or wear.
- d. Inspect remaining hardware for wear, damaged threads, and general serviceability. Replace components as required.

4-23. Installation (Fig 4-7)

NOTE

Procedures for both left and right sides are the same.

- a. Install lifting device to pushbeam.
- b. Align and install pushbeam to blade assembly, secure with two screws, lockwashers, pins, and locks (view C).
- c. Install pushbeam to mounting bracket, and secure with screw, lockwasher pin and lock (view B).
- d. Align ram assembly with pushbeam. Insert pin, and secure with screw, lockwasher, and lock (view A).

Section VII. MAINTENANCE OF TILT ARM

4-24. Description. The tilt arms are connected to the blade assembly and to the mounting bracket. When the blade assembly is raised, the carrying hooks can be engaged with the travel locks to secure the blade assembly.

4-25. Removal (Fig 4-8).

NOTE

Procedures for both left and right sides are the same.

- a. Lower blade assembly to rest on ground.
- b. Attach lifting device to inner tilt arm.

CAUTION

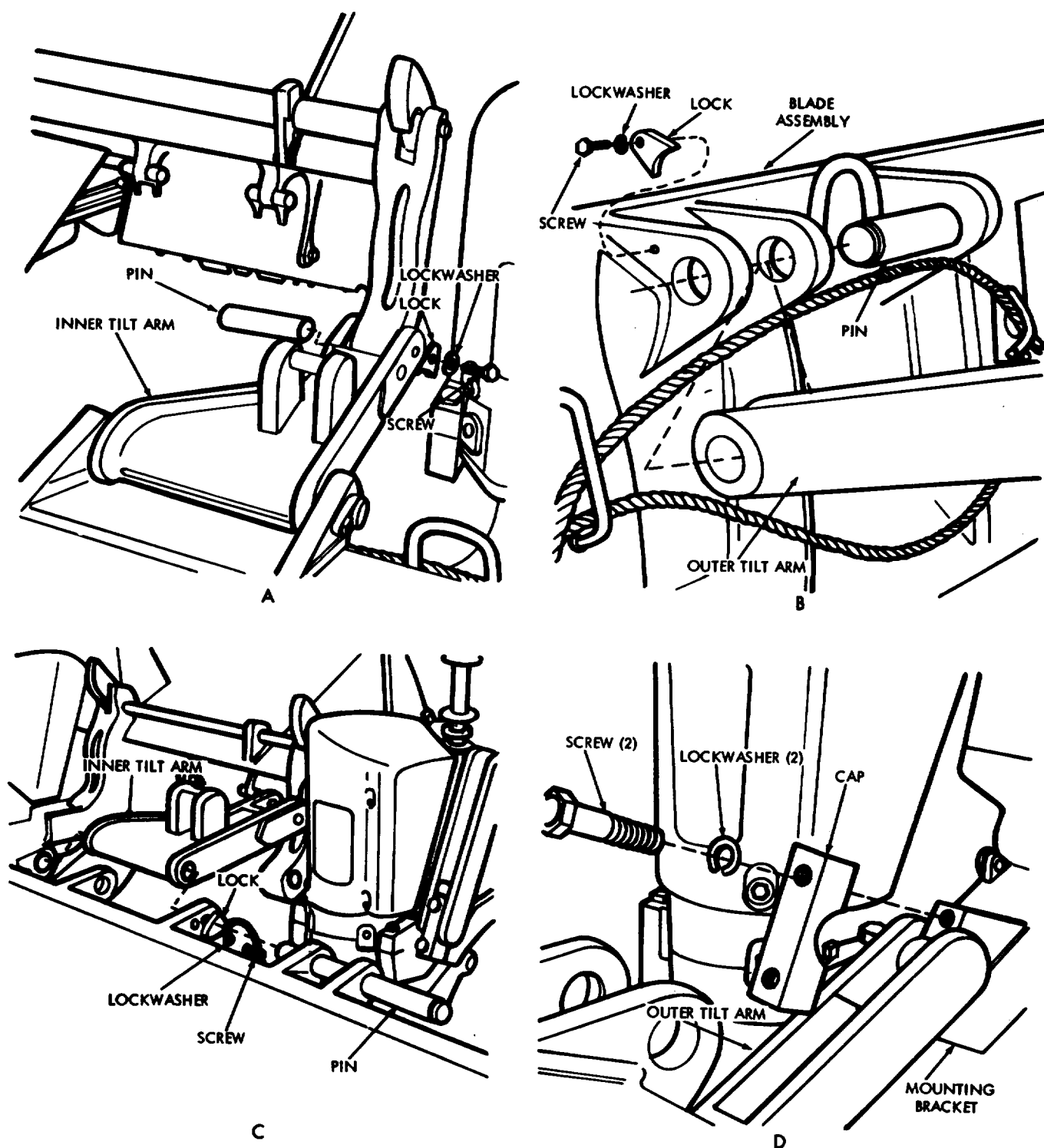
Before removing pin, support weight of tilt arm with a suitable jack or wood block.

- c. Remove screw, lockwasher, lock, and pin securing inner tilt arm to mounting bracket (view A).

- d. Attach lifting device to outer tilt arm.
- e. Remove screw, lockwasher, lock, and pin securing outer tilt arm to blade assembly, and remove tilt arm (view B).
- f. Remove screw, lockwasher, lock, and pin securing inner tilt arm and blade assembly. Remove inner tilt arm (view C).
- g. Remove two screws, lockwashers, and cap securing outer tilt arm to mounting bracket. Remove outer tilt arm (view D).

4-26. Cleaning and Inspection.

- a. Clean all parts, including housing mating surfaces, using dry-cleaning solvent.
- b. Inspect all components for cracks or damage.
- c. Inspect machined surfaces for pitting or wear.
- d. Inspect remaining hardware for wear, damaged threads, and general serviceability. Replace components as required.



TA169966

Figure 4-8. Removal or installation of tilt arms.

4-27. Installation (Fig 4-8).

NOTE

Procedures for both left and right sides are the same.

- a. Attach lifting device to outer tilt arm.
- b. Install outer tilt arm to mounting bracket. Position cap, and secure with two screws and lockwashers (view D).
- c. Install inner tilt arm to blade assembly and secure

with pin. Position lock on pin, and secure with screw and lockwasher (view C).

d. Install outer tilt arm to blade assembly and secure with pin. Position lock on pin, and secure with screw and lockwasher (view B).

e. Attach lifting device to inner tilt arm.

f. Install inner tilt arm to mounting bracket, and secure with pin. Position lock on pin, and secure with screw and lockwasher (view A).

Section VIII. MAINTENANCE OF HYDRAULIC HOSES, TUBES, LINES, AND FITTINGS

4-28. Description. The hydraulic hoses, tubes, lines, and fittings connect the hydraulic pump at the rear of the transmission to the hydraulic cylinders connected at the bulldozer blade assembly. The movement of hydraulic fluids provides the modes of operation for the bulldozer.

CAUTION

Do not remove drain plugs or disconnect lines while engine is running to prevent damage to hydraulic pump.

4-29. Removal (Fig 4-9).

a. Reservoir Hoses, Tubes, and Elbow.

(1) Stop vehicle engine, apply brakes, and drain hydraulic system (fig 4-1).

(2) Remove two screws and lockwashers securing support to upper guard (view A, fig 4-9).

(3) Remove five screws and lockwashers securing upper guard to lower guard (view A). Remove upper guard.

(4) Remove two bolts, lockwashers, washers, and nuts securing guard to left rear fender (view A). Remove guard.

(5) Disconnect two seals and tubes connected to elbows (view B).

(6) Remove three screws, lockwashers, and nuts securing lower guard to left rear fender (view C). Remove lower guard.

CAUTION

Tape ends of tubes and lines to prevent entry of foreign matter.

(7) Remove two hose assemblies from reservoir assembly (view D).

(8) Remove two elbows from hose assemblies (view D).

(9) Remove two nuts, lockwashers, and washers from U-bolt. Remove U-bolt (view E).

(10) Remove two screws, lockwashers, and nuts securing plate to underside of left rear fender (view E).

(11) Remove screw, lockwasher, and nut securing bracket to tube (view E).

(12) Remove six screws and lockwashers securing tube, two flanges, and packing, to elbow on access clamp plate (view F). Remove tube.

(13) Remove six screws, lockwashers and nuts securing tube, four flanges and packing (view F). Remove tube.

(14) Remove six screws and lockwashers securing tube, two flanges, and packing to elbow on access clamp plate (view G).

(15) Remove six screws, lockwashers, nuts, four flanges, and packing securing tube (view G). Remove tube.

(16) Open rear grille doors.

(17) Remove four screws, lockwashers, two flanges, and packing from hose on inside of access clamp plate (view H).

(18) Remove four screws, lockwashers, two flanges, and packing from hose on inside of access clamp plate (view I).

(19) Remove eight screws and lockwashers securing two access clamp plates, and gasket, and remove two elbows, clamp plates, and gasket (view G).

(20) Remove three screws and lockwashers securing front guard (view J) and remove guard.

(21) Remove five screws and lockwashers securing rear guard and bracket to underside of hull (view K). Remove bracket and rear guard.

(22) Remove six blocks, if necessary, for repair (view J and K).

b. Lower Hoses, Tubes, and Guards (Fig 4-10).

(1) Disconnect two hoses from control valve manifold (view A).

(2) Remove ten screws and lockwashers securing five lower tube brackets to underside of hull (view B). Remove two tubes and hoses.

(3) Remove ten screws, lockwashers, and washers securing five brackets, and remove brackets (view C).

4-30. Inspection and Repair.

a. Inspect all hoses, tubes, and elbows for damage or excessive wear. Replace defective parts.

b. Inspect guards, plates, and bracket for cracks, fractures, deformation, and nicks. Replace defective parts.

c. Check threaded hose and tube ends and screw holes for worn or damaged threads. Replace worn or damaged parts.

4-31. Installation.

a. Lower Hoses, Tubes, and Guards (Fig 4-10).

(1) Install five brackets on underside of hull, and secure with ten screws, lockwashers, and washers (view C).

(2) Install two tubes, hoses, and five lower tube brackets to underside of hull, and loosely attach with ten screws and lockwashers (view B).

(3) Connect two hoses to control valve manifold (view A).

(4) Tighten ten screws and lockwashers.

b. Reservoir Hoses, Tubes, and Elbow (Fig 4-9).

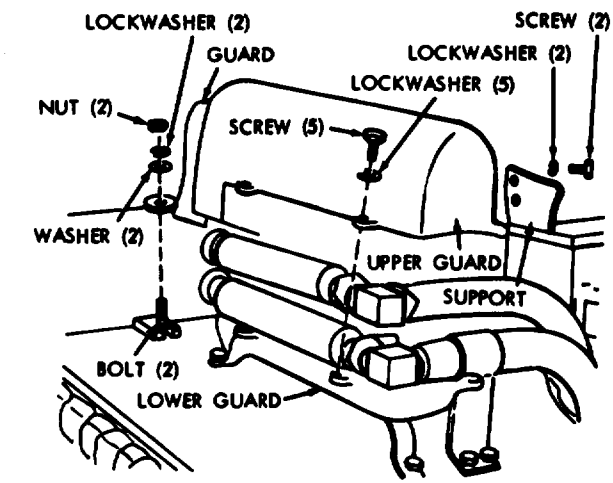
(1) Install six new blocks if repair is necessary (view J and K).

(2) Install bracket and rear guard to underside of hull, and secure with five screws and lockwashers (view K).

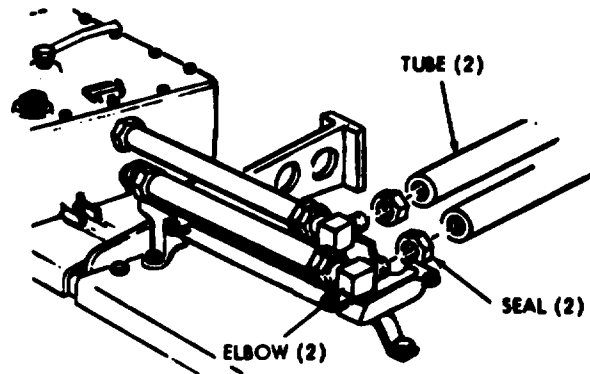
(3) Install front guard, and secure with three screws and lockwashers (view J).

(4) Install gasket, two access clamp plates, and elbows and secure with eight screws and lockwashers (view G).

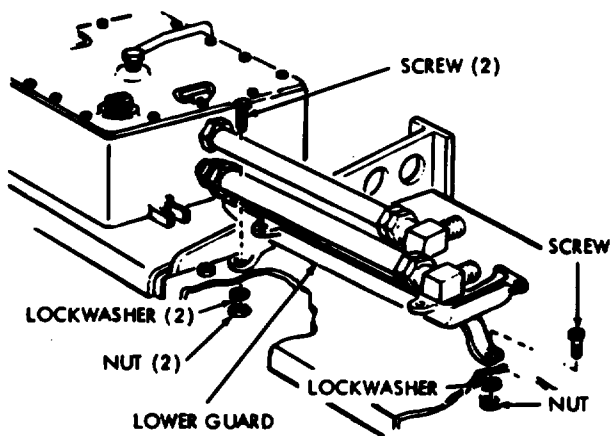
(5) Install two flanges and packing to hose on inside of access clamp plate, and secure with four screws and lockwashers (view I).



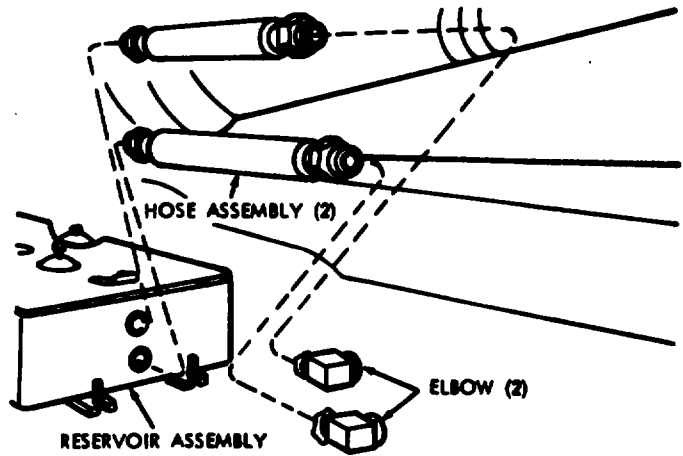
A



B



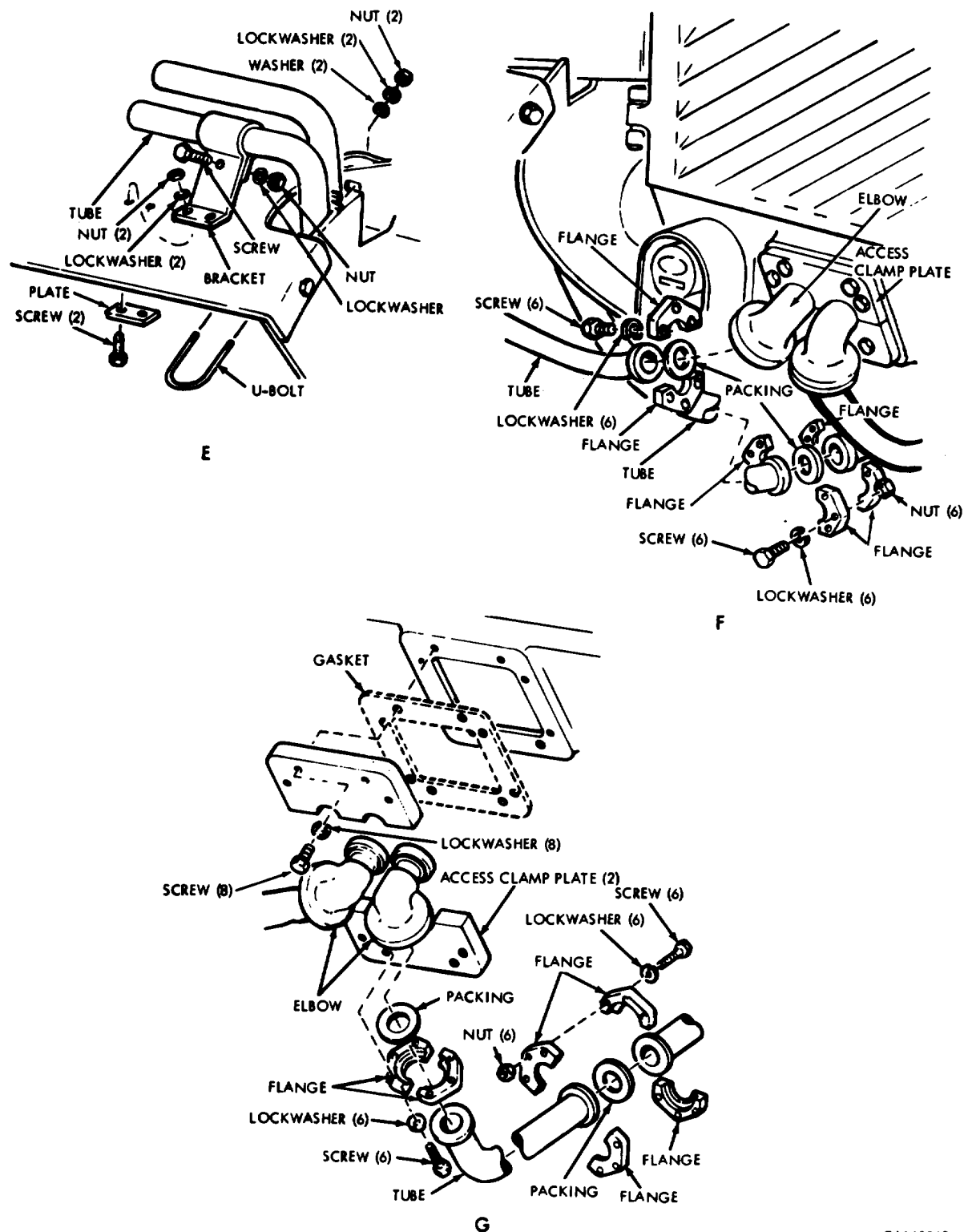
C



D

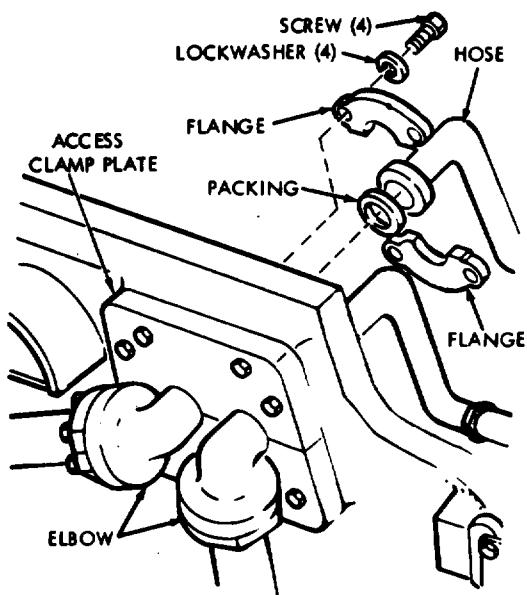
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Figure 4-9. Removal or installation of rear tube assemblies (sheet 1 of 3).

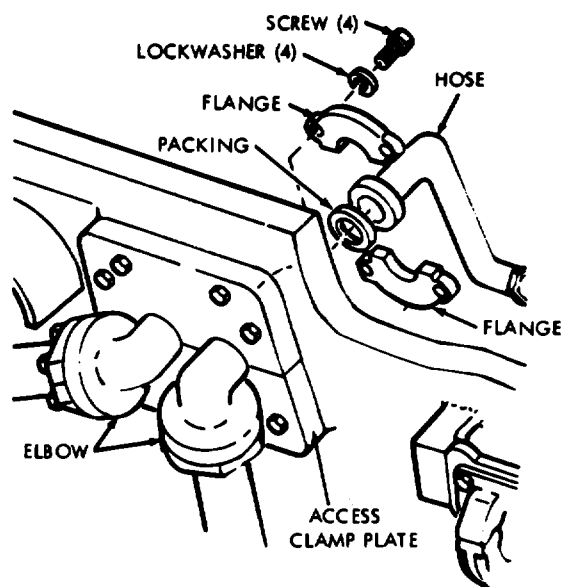


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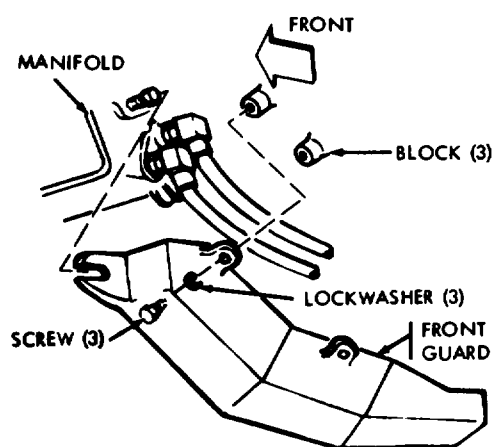
Figure 4-9. Removal or installation of rear tube assemblies (sheet 2 of 3).



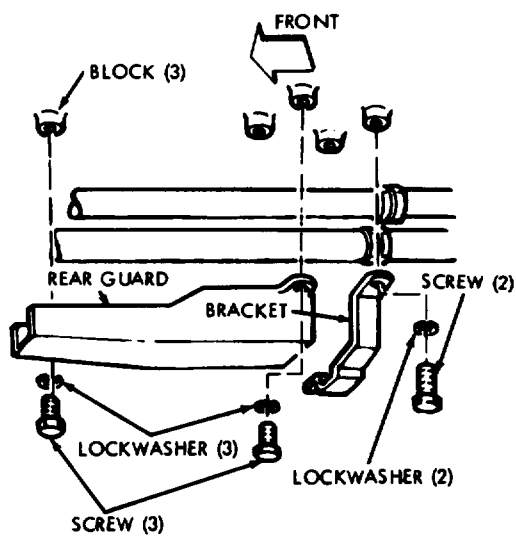
H



I



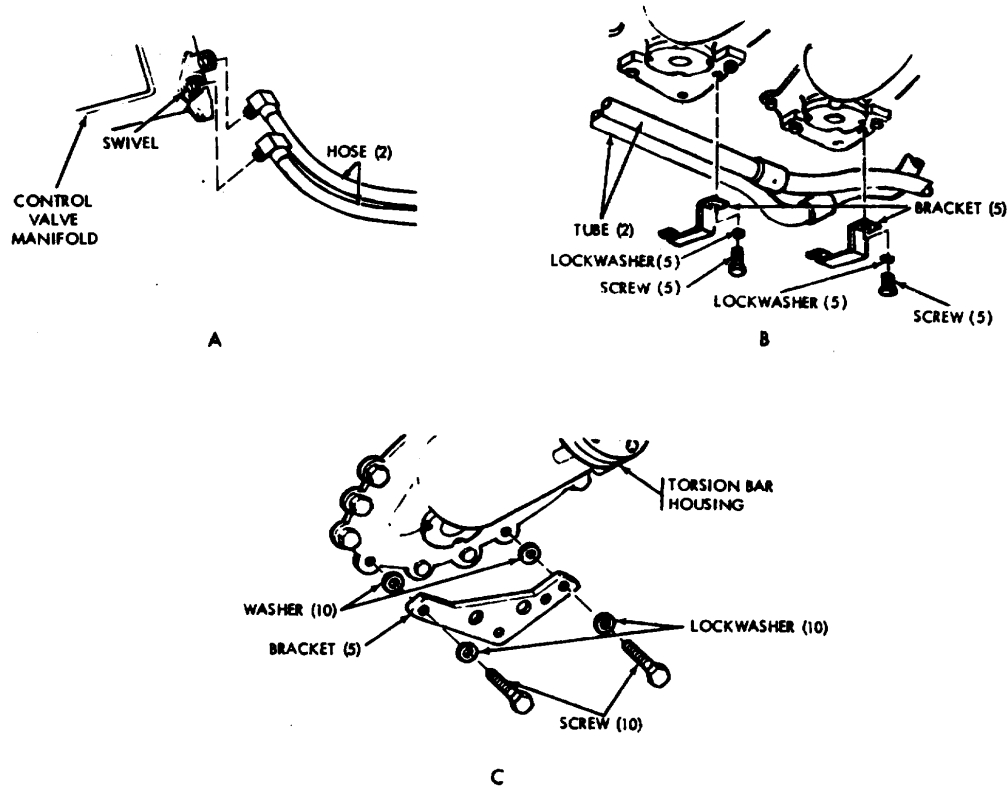
J



K

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Figure 4-9. Removal or installation of rear tube assemblies (sheet 3 of 3).



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Figure 4-10. Removal or installation of lower hoses, tubes, and guards.

(6) Install two flanges and packing to hose on inside of access clamp plate, and secure with four screws and lockwashers (view H).

(7) Install tube, four flanges, and packing; secure with six screws, lockwashers and nuts (view G).

(8) Install tube, two flanges, and packing to elbow on access clamp plate, and secure with six screws and lockwashers (view G).

(9) Install tube, four flanges and packing; secure with six screws, lockwashers, and nuts (view F).

(10) Install tube, two flanges, and packing on access clamp plate, and secure with six screws and lockwashers (view F).

(11) Install bracket to tube, and secure with screws, lockwasher, and nut (view E).

(12) Install plate and bracket on left rear fender; secure with two screws, lockwasher, and nuts (view E).

(13) Install U-bolt, and secure with two nuts, lockwashers, and washers (view E).

(14) Install two elbows to hose assemblies (view D).

- (15) Install two hose assemblies to reservoir assembly (view D).
- (16) Install lower guard to left rear fender, and secure with three screws, lockwashers, and nuts (view C).
- (17) Connect two seals and tubes to elbows (view B).
- (18) Install guard to left rear fender, and secure with two

bolts, lockwashers, washers, and nuts (view A).

(19) Install upper guard to lower guard, and secure with five screws and lockwashers (view A).

(20) Install support to upper guard, and secure with two screws and lockwashers (view A).

(21) Fill hydraulic system with oil. Refer to figure 3-1.

Section IX. MAINTENANCE OF HYDRAULIC CYLINDER ASSEMBLY AND GUARDS

4-32. Description. The hydraulic cylinder assemblies are connected to the mounting brackets at the front of the vehicle, and operate the pushbeams in an up and down motion. Hydraulic oil flows to the cylinder assemblies through hose assemblies that are attached to the manifold control valve on the front of the vehicle. Armored guards protect the cylinders and hoses.

CAUTION

Do not remove drain plugs or disconnect tubes while vehicle engine is running to prevent damage to hydraulic pump.

4-33. Removal (Fig 4-11).

NOTE

Procedures for both left and right sides are the same.

- a. With engine shut off, open lines carefully to relieve pressure and drain hydraulic system (fig 4-1).
- b. Remove four screws from top guard (view A, fig 4-11).
- c. Remove four screws, lockwashers, and washers, securing top guard to front guard, and remove top guard (view B).

d. Remove two screws, lockwashers, and washers securing front guard, and remove front guard (view B).

e. Remove four screws, lockwashers, and washers securing rear guard, and remove rear guard (view C).

f. Remove four screws and lockwashers securing two caps to mounting bracket, and remove caps (view D).

NOTE

Take care when loosening or tightening hose to avoid damage by twisting and turning.

g. Disconnect two hose assemblies from cylinder assembly (view E).

h. Disconnect elbow and reducer from top of cylinder assembly (view E).

i. Disconnect elbow, seal assembly, elbow, two nipples, elbow, and reducer from bottom of cylinder assembly (view E).

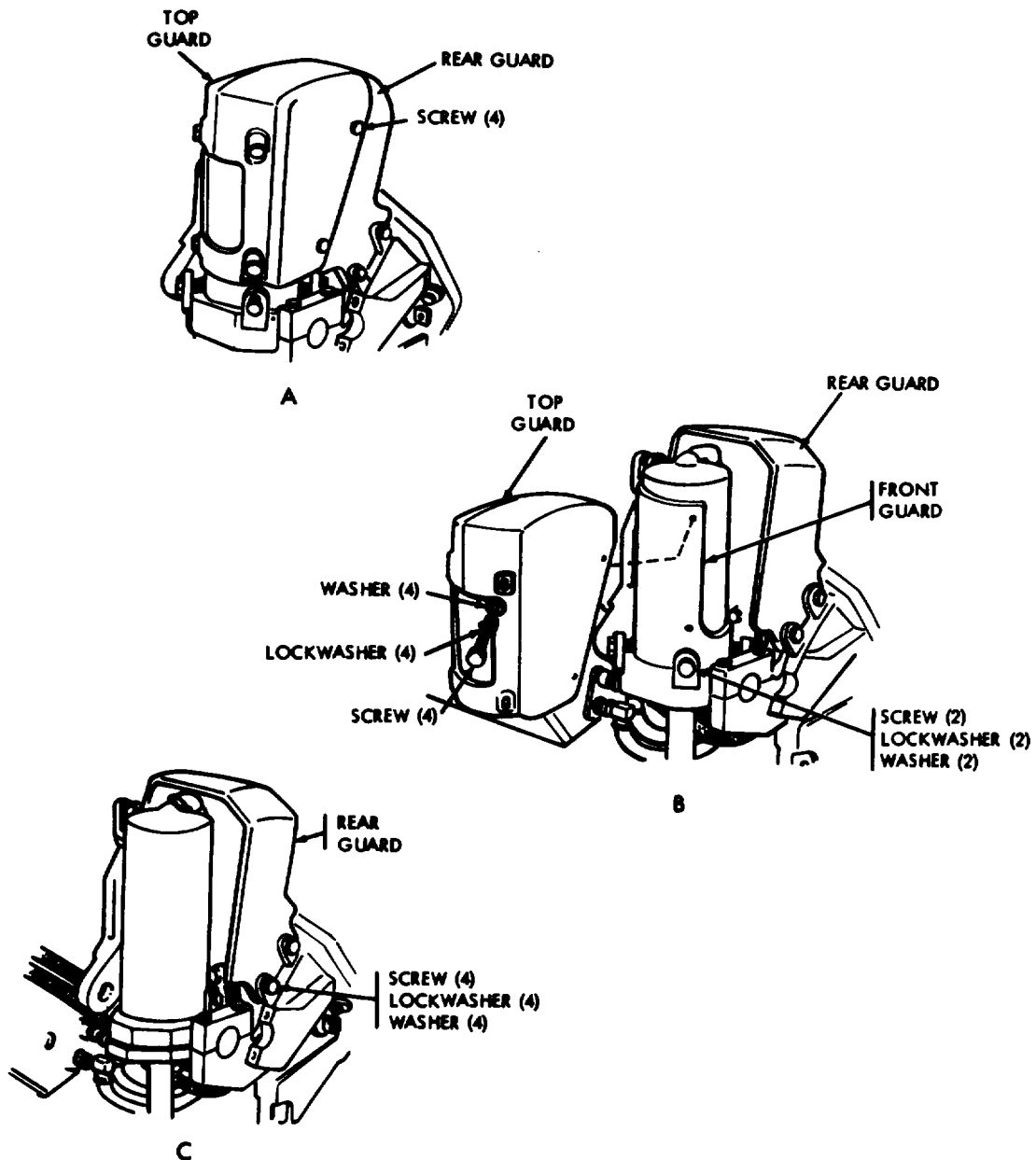
j. Remove screw, lockwasher, and lock securing pin to pushbeam and ram assembly. Remove pin (view F).

k. Remove cylinder assembly from mounting bracket (view F).

4-34. Cleaning. Clean all parts with dry-cleaning solvent (refer to App. P). Be sure that all the old lubricants and foreign matter are removed from the lubrication passages.

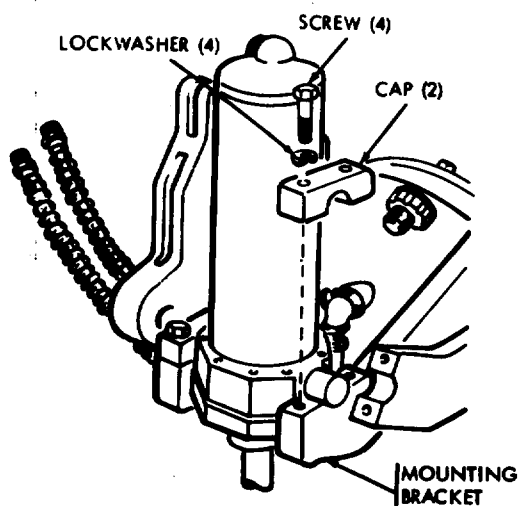
nicks or burrs. Replace parts if necessary. Polish accessible machined surfaces with crocus cloth and then wash with dry-cleaning solvent.

4-35. Inspection. Inspect surfaces for cracks, breaks,

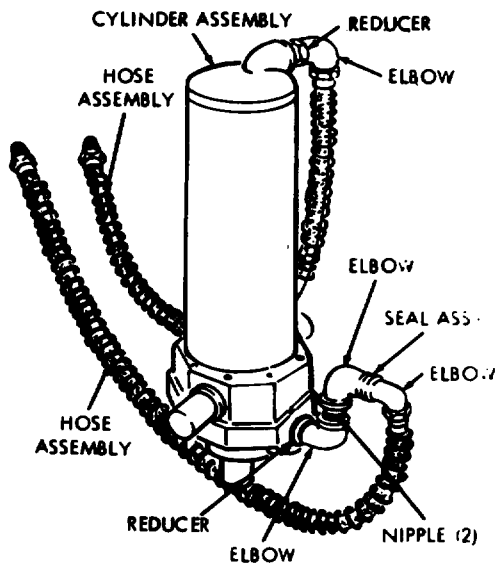


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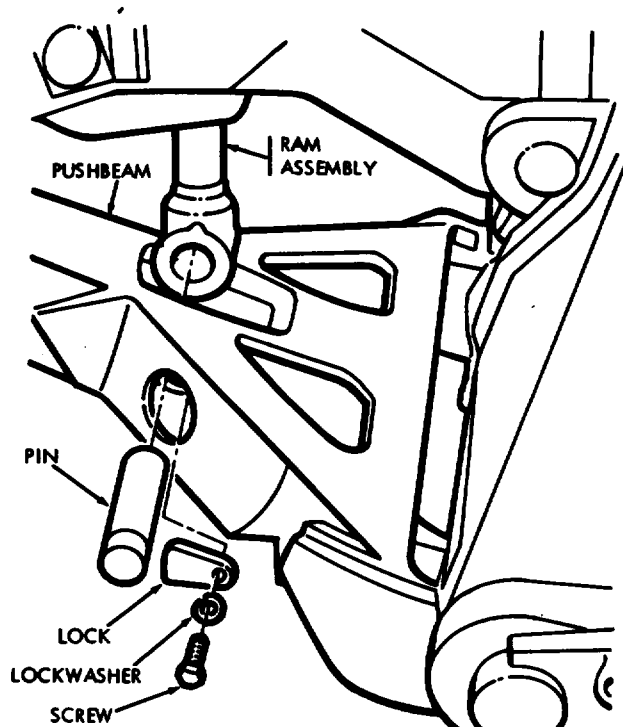
Figure 4-11. Removal or installation of cylinder assembly and guards (sheet 1 of 2).



D



E



F

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Figure 4-11. Removal or installation of cylinder assembly and guards (sheet 2 of 2).

4-36. Installation (Fig 4-11).

NOTE

Procedures for both left and right sides are the same.

- a. Position cylinder assembly on mounting bracket (view F).
- b. Install pin securing pushbeam to ram assembly. Secure with screw, lockwasher, and lock (view F).
- c. Connect reducer, elbow, two nipples, elbows, seal assembly, and elbow to bottom of cylinder assembly (view E).
- d. Connect reducer and elbow to top of cylinder assembly (view E).
- e. Connect two hose assemblies to cylinder assembly (view E).

f. Install two caps to mounting bracket. Secure with four screws and lock-washers (view D).

g. Install rear guard, and secure with four screws, lockwashers, and washers (view C).

h. Install front guard, and secure with two screws, lockwashers, and washers (view B).

i. Install top guard, and secure with four screws, lockwashers, and washers (view B).

j. Install four screws securing top guard (view A).

k. Fill hydraulic system (fig 3-1).

Section X. MAINTENANCE OF BLADE AND CYLINDER MOUNTING BRACKETS

4-37. Description. Two mounting brackets support the blade, pushbeams, tilt arms, hydraulic cylinders, and carrying hooks on the front of the vehicle. The pushbeams and tilt arms pivot on the mounting brackets when the hydraulic cylinders are extended or retracted.

4-38. Removal (Fig 4-12).

- a. Remove cylinder assembly and guards from mounting bracket (para 4-33).
- b. Remove pushbeam from mounting bracket (para 4-21).
- c. Remove tilt arm from mounting bracket (para 4-25).
- d. Remove carrying hooks from mounting brackets (para 4-56).
- e. Remove two screws, lockwashers, and washers securing guard, and remove guard (view A).

f. Remove three setscrews and nuts on mounting bracket (view A).

g. Remove two screws, lockwashers, and washers securing guard to mounting bracket (view A).

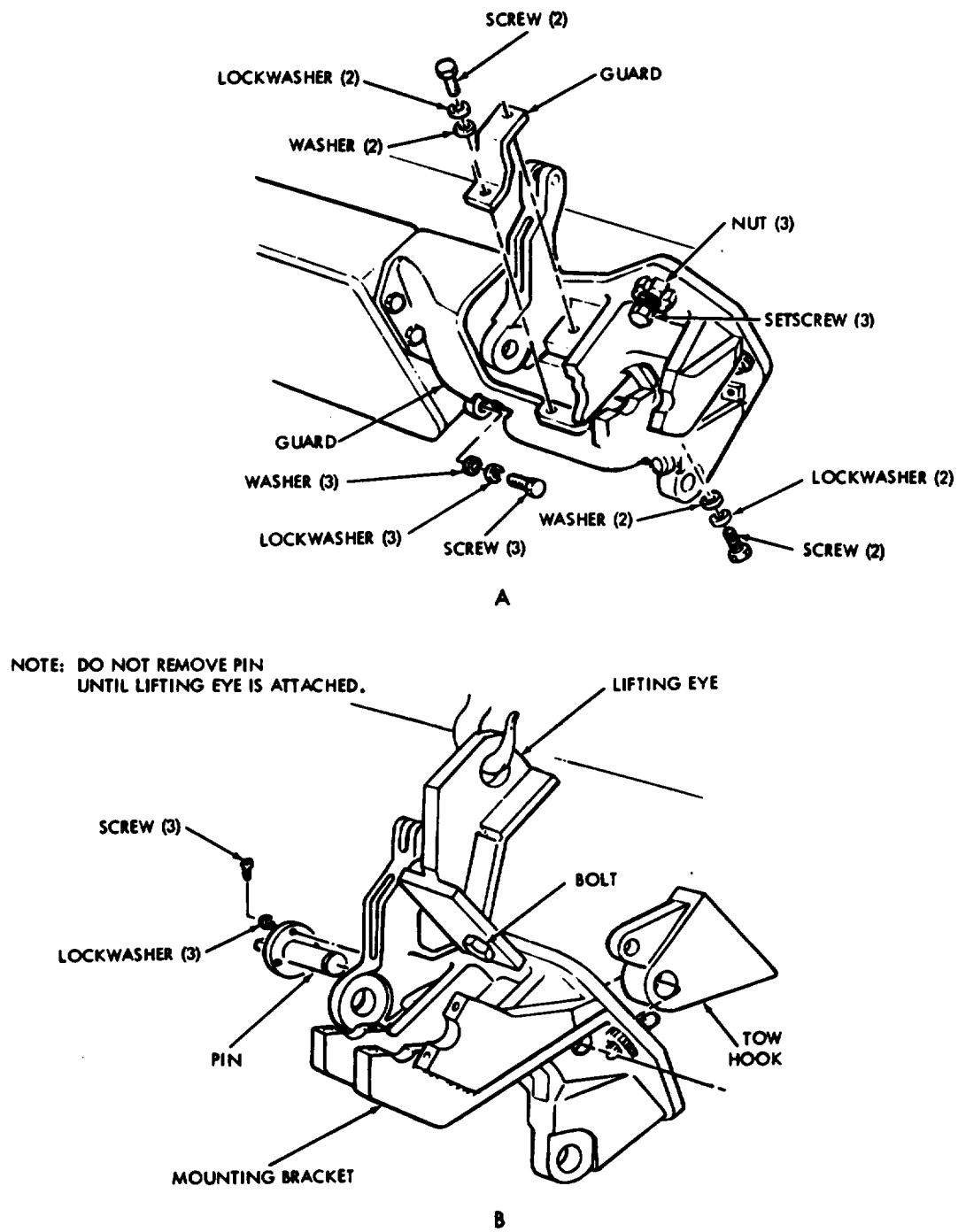
h. Remove three screws, lockwashers, and washers securing guard to mounting bracket, and remove guard (view A).

i. Install lifting eye to mounting bracket and secure with bolt (view B).

j. Attach cable and hook to lifting eye, and take up slack (view B).

k. Remove three screws and lockwashers securing pin to mounting bracket, and remove pin (view B).

l. Remove mounting bracket from vehicle (view B).



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Figure 4-12. Removal or installation of blade and cylinder mounting bracket.

4-39. Cleaning. Clean all parts with dry-cleaning solvent. Be sure that all the old lubricant and foreign material are removed.

4-40. Inspection.

a. Inspect case parts for cracks or fractures, and inspect interiors for scores and burrs.

b. Inspect machined surfaces for cracks, fractures, and signs of galling, pitting, scoring, or corrosion.

c. Remove minor scores and burrs from machined surfaces and interiors of cast parts with a fine stone or crocus cloth that has been dipped in drycleaning solvent. Replace part if it is cracked, fractured, or excessively scored or burred.

4-41. Installation (Fig 4-12).

a. Attach cable and hook to lifting eye, and position mounting bracket to tow hook on front of vehicle (view B).

b. Align mounting bracket with hole in tow hook, and install pin (view B).

c. Install three screws and lockwashers securing pin to mounting bracket (view B).

d. Remove bolt securing lifting eye to mounting bracket, and remove lifting eye (view B).

e. Install guard to mounting bracket, and secure with three screws, lockwashers, and washers (view A).

f. Install guard to mounting bracket, and secure with two screws, lockwashers, and washers (view A).

g. Install three setscrews and nuts to mounting bracket (view A).

h. Install guard, and secure with two screws, lockwashers and washers (view A).

i. Install carrying hooks to mounting brackets (para 4-58).

j. Install tilt arm to mounting bracket (para 4-27).

k. Install pushbeam to mounting bracket (para 4-23).

i. Install cylinder assembly and guard. to mounting bracket (para 4-36).

4-42. Adjustment. Tighten three adjusting nuts and setscrews so that mounting bracket is aligned properly with attaching parts. Misalignment will cause binding and excessive wear to attaching parts.

Section XI. MAINTENANCE OF MANIFOLD ASSEMBLY

4-43. Description. The manifold is located on the front of the tank. The flow of oil from the pump through the manifold to the hydraulic cylinders allows up and down movement of the blade assembly.

CAUTION

Do not remove drain plugs or disconnect tubes while vehicle engine is running to prevent damage to hydraulic pump.

4-44. Removal (Fig 4-13).

a. Open line carefully to relieve pressure. Drain hydraulic fluid from system (Fig. 4-1).

b. Remove screws, lockwashers, and washers securing left and right guards (view A, fig 4-12).

c. Using floor jack under guards, re. move guards from left and right sides of manifold assembly.

d. Disconnect six hose assemblies from manifold assembly (view A, fig 4-13).

e. Remove 12 screws and lockwashers securing cover and gasket to manifold assembly, and remove cover and gasket (view B).

f. Remove six screws and lockwashers securing control linkage guard and gasket.

g. Remove pin and cotter pin securing clevis to control valve assembly, and push clevis rod through bottom of manifold assembly housing (view B).

h. Install cover and secure with 12 screws and lockwashers (view B).

i. Remove four elbows from left and right sides of manifold assembly (view C).

j. Attach lifting cable to manifold assembly cover. Take up slack (view D).

k. Remove two screws, lockwashers, and washers securing bottom of manifold assembly to pads (view D).

l. Remove two pins, washers, and cotter pins securing top of manifold assembly to lugs. Remove manifold assembly from vehicle (view D).

m. Remove two lugs and pads if repair is necessary (view D).

4-45. Cleaning and Inspection.

a. Clean all parts, including housing mating surfaces, using drycleaning solvent.

b. Inspect all components for cracks or damage.

c. Inspect machined surfaces for pitting or wear.

d. Inspect remaining hardware for wear, damaged threads, and general serviceability. Replace components as required.

4-46. Installation (Fig 4-13).

a. Install two new lugs and pads if replacement is necessary (view D).

b. Attach lifting cable to manifold assembly cover and position on front of vehicle (view D).

c. Install two pins, washers, and cotter pins securing top of manifold assembly to lugs (view D).

d. Remove lifting cable from manifold assembly cover (view D).

e. Install two screws, lockwashers, and washers securing bottom of manifold assembly to pads (view D).

f. Install four elbows to left and right sides of manifold assembly (view C).

g. Remove 12 screws and lockwashers, and remove cover and gasket from manifold assembly (view B).

h. Pull clevis rod through bottom of manifold assembly housing, and secure to control valve assembly with pin and cotter pin (view B).

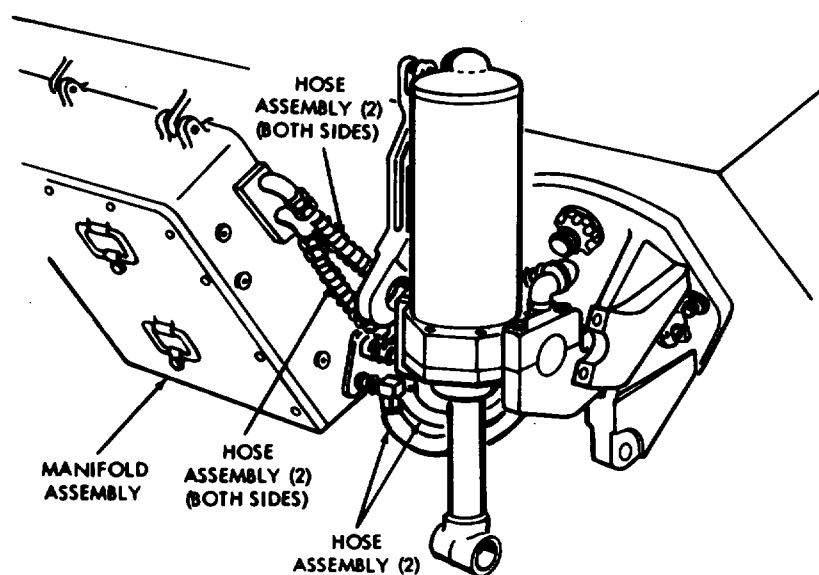
i. Install six screws and lockwashers securing control linkage guard and gasket.

j. Install cover and gasket to manifold assembly, and secure with 12 screws and lockwashers (view B).

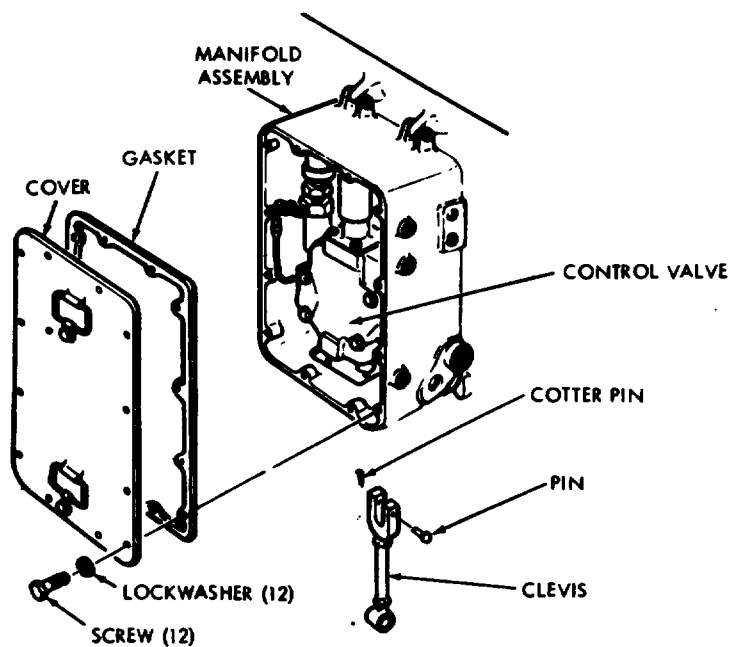
k. Connect six hose assemblies to manifold assembly (view A).

l. Install guards to left and right sides of manifold assembly (para 4-46).

m. Fill and bleed hydraulic system (fig 3-1).



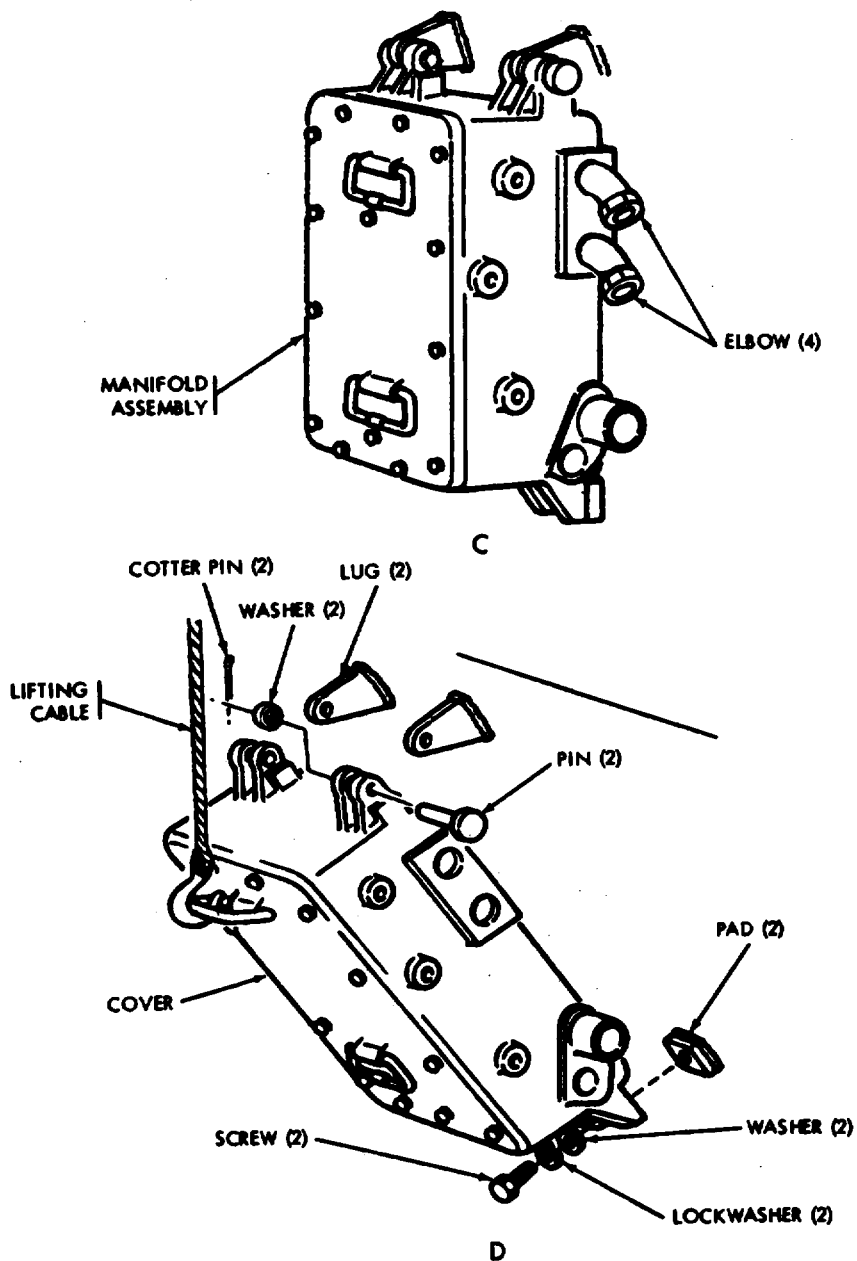
A



B

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Figure 4-13. Removal or installation of manifold assembly (sheet 1 of 2).



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Figure 4-13. Removal or installation of manifold assembly (sheet 2 of 2).

Section XII. MAINTENANCE OF MANIFOLD UNLOADER ASSEMBLY

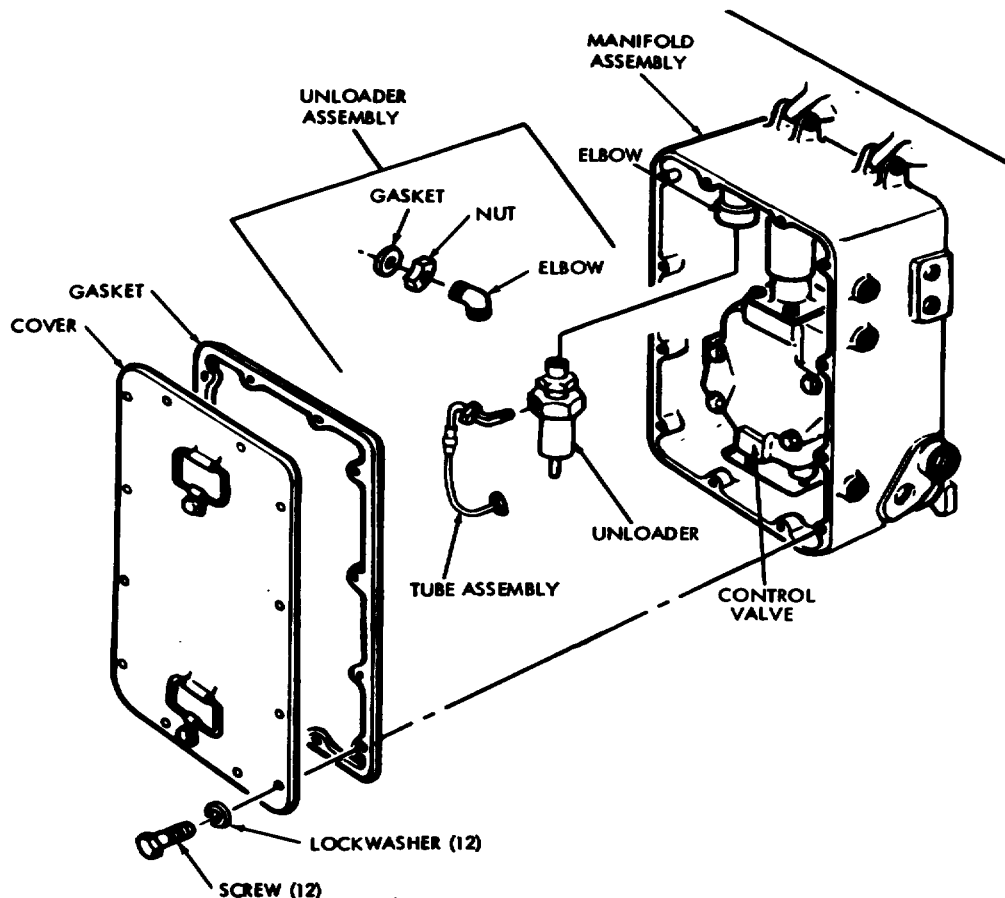
4-47. Description. The manifold unloader assembly is mounted inside the manifold assembly located on the front of the tank. Hydraulic oil from the control valve pass through the unloader assembly to the two cylinder assemblies. If there is a pressure overload, the unloader assembly relieves the pressure and returns the bypassed oil to the reservoir.

CAUTION

Do not remove drain plugs or disconnect tubes while engine is running to prevent damage to hydraulic pump.

4-48. Removal (Fig. 4-14).

- a. Open line carefully to relieve pressure. Drain hydraulic fluid from system (fig 4-1).
- b. Remove 12 screws and lockwashers securing manifold assembly cover and gasket, and remove cover and gasket.
- c. Disconnect tube assembly located between control valve and unloader assembly.
- d. Remove unloader assembly from manifold assembly by unscrewing from elbow.
- e. Remove elbow from manifold assembly



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Figure 4-14. Removal, disassembly, assembly or installation of manifold unloader assembly.

4-49. Disassembly (Fig 4-14).

- a. Remove elbow from unloader assembly.
- b. Remove gasket from unloader assembly elbow.
- c. Remove nut from unloader assembly elbow.

4-50. Assembly (Fig 4-14).

- a. Install nut to unloader assembly elbow.
- b. Install gasket to unloader assembly elbow.
- c. Install elbow to unloader assembly.

4-51. Installation (Fig. 4-14).

- a. Install elbow in manifold assembly.
- b. Install unloader assembly to elbow and tighten.
- c. Connect tube assembly between control valve and unloader assembly.
- d. Install cover and gasket on manifold assembly, and secure with 12 screws and lockwashers.
- e. Fill and bleed hydraulic system (fig 3-1).

Section XIII. MAINTENANCE OF MANIFOLD CONTROL VALVE ASSEMBLY

4-52. Description. The control valve assembly is mounted inside the manifold assembly located on the front of the tank. It controls the flow of oil from the reservoir to the two cylinder assemblies. When the oil passes in one direction, the blade assembly is raised. When the oil passes in the other direction, the blade assembly is lowered.

CAUTION

Do not remove drain plugs or disconnect tubes while engine is running to prevent damage to hydraulic pump.

4-53. Removal (Fig 4-15).

- a. Disconnect lines carefully to relieve pressure. Drain hydraulic system (fig 4-1).
- b. Remove 12 screws and lockwashers securing manifold assembly cover and gasket, and remove cover and gasket (view A, fig 4-15).

- c. Disconnect tube assembly from control valve assembly (view A).
- d. Remove cotter pin and pin securing clevis to control valve assembly, and push clevis rod through bottom of manifold assembly housing (view A).
- e. Remove four screws and lockwashers securing control valve assembly to manifold assembly, and remove control valve (view B).
- f. Remove four preformed packings located between control valve assembly and manifold housing (view B).

4-54. Installation (Fig. 4-15).

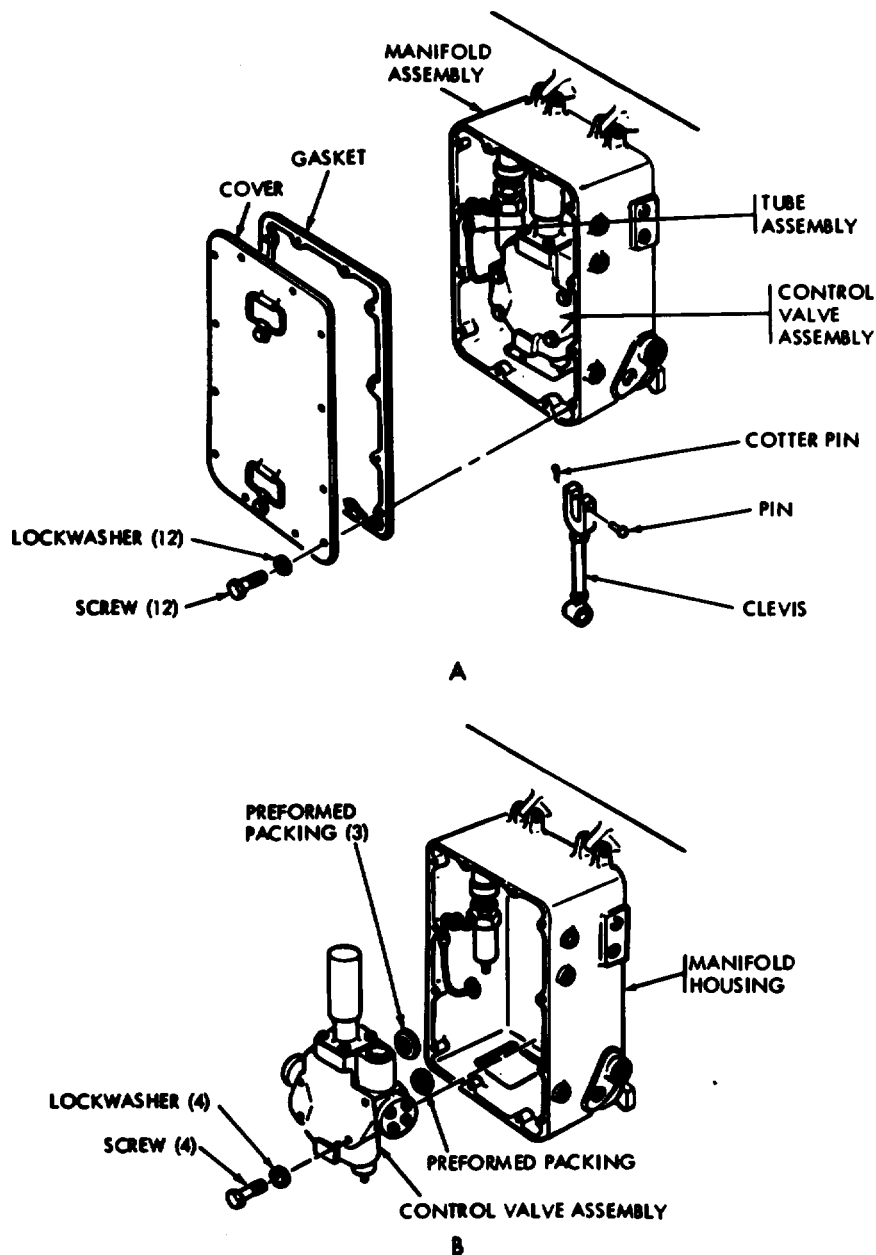
- a. Install four preformed packings between control valve assembly and manifold housing (view B).
- b. Install control valve assembly to manifold housing, and secure with four screws and lockwashers (view B).

c. Connect tube assembly to control valve assembly (view A).

d. Pull clevis rod through bottom of manifold assembly housing, and secure to control valve assembly with pin and cotter pin (view A).

e. Install cover and gasket to manifold assembly, and secure with 12 screws and lockwashers (view A).

f. Fill and bleed hydraulic system (fig 3-1).



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Figure 4-15. Removal or installation of manifold control valve assembly.

Section XIV. MAINTENANCE OF BLADE ASSEMBLY CARRYING HOOKS AND SHAFTS

4-55. Description. Two carrying hooks hold the blade assembly in raised position for vehicle travel. The hooks are manually operated from outside the driver's compartment. Pushing on the handle disengages the hooks. Pulling on the handle engages the hooks.

4-56. Removal (Fig. 4-16).

- a. Lower blade assembly to ground.
- b. Remove cotter pin and retaining pin securing clevis to arm, and remove clevis (view A).
- c. Remove clevis and jam nut from handle assembly and remove handle from support (view A).
- d. Remove setscrew and nut securing left carrying hook to shaft and mounting bracket (view B).
- e. Remove setscrew and nut securing right carrying hook to shaft and mounting bracket. Remove carrying hooks and shaft (view B).
- f. Remove cylinder guards from right side of mounting bracket (para 4-33).
- g. Remove screw, lockwasher, and key securing arm to shaft, and remove arm (view C).

4-57. Cleaning and Inspection.

- a. Clean all parts using drycleaning solvent.
- b. Inspect all components for cracks or damage.

- c. Inspect machined surfaces for pitting or wear.

- d. Inspect remaining hardware for wear, damaged threads, and general serviceability. Replace components as required.

4-58. Installation (Fig 4-16.)

- a. Slide shaft through right side mounting bracket.
- b. Install arm to shaft, and secure with screw, lockwasher, and key (view C).
- c. Move shaft to mounting bracket left side, and slide into arm.
- d. Install left carrying hook to shaft and mounting bracket.
- e. Install right carrying hook to shaft and mounting bracket, and secure with setscrew and nut (view B).
- f. Secure left carrying hook to shaft with setscrew and nut (view B).
- g. Install cylinder guards to right mounting bracket (para 4-36).
- h. Install handle assembly through support (view A).
- i. Install clevis and jam nut to handle assembly (view A).
- j. Install clevis to arm, and secure retaining pin and cotter pin (view A).

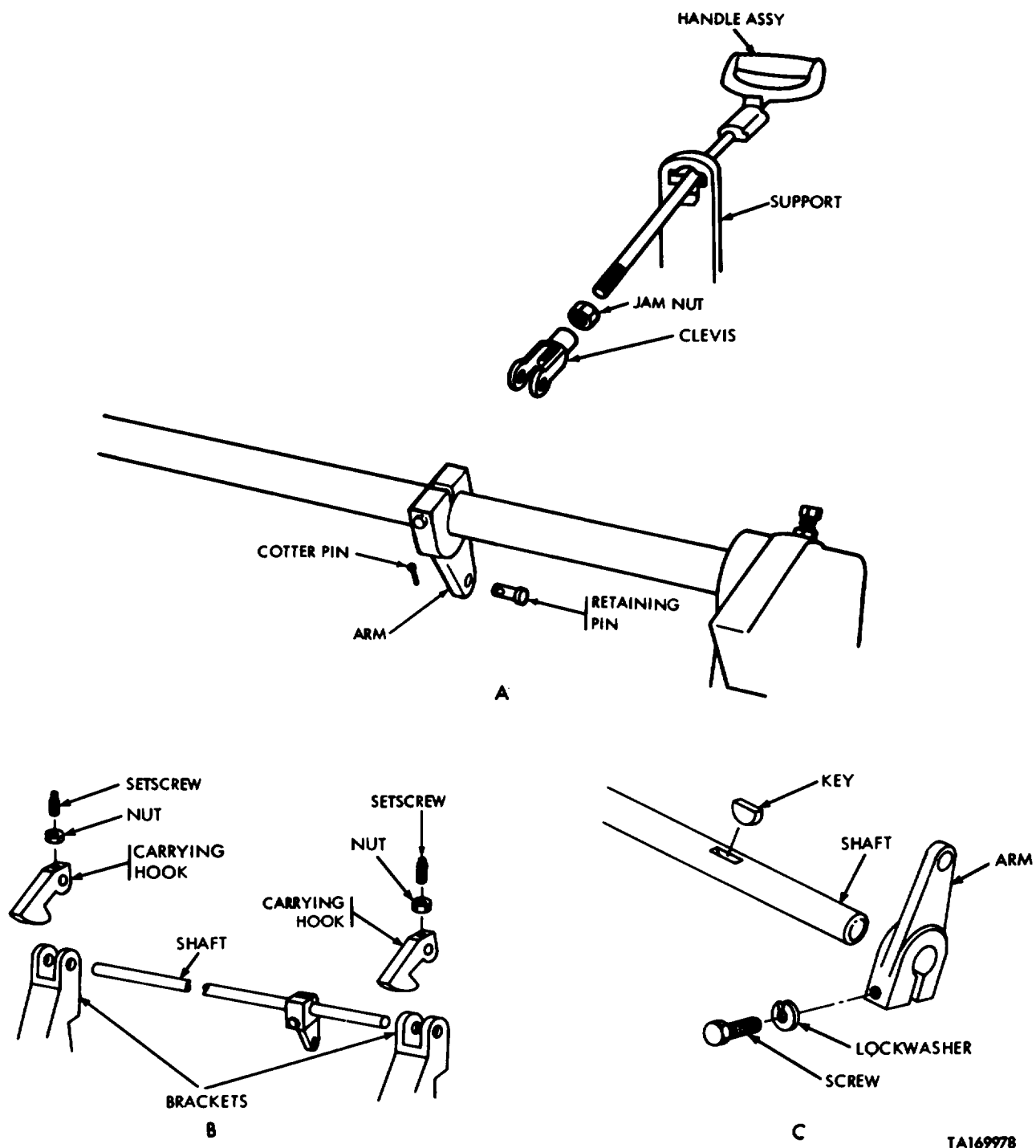


Figure 4-16. Removal or installation of carrying hooks and shafts.

Section XV. MAINTENANCE OF RESERVOIR

4-59. Definition. The oil reservoir is mounted to the left rear fender. Tubing and hoses connect it with the control valve and hydraulic pump. Controlled movement of hydraulic oil in one direction or the other moves the blade assembly up or down. The reservoir also has an air vent line and filter which is vented to the air cleaner.

CAUTION

Do not remove drain plug or disconnect tubes while engine is running to prevent damage to hydraulic pump.

4-60 Removal (Fig 4-17).

- a. Open lines carefully to relieve pressure. Drain hydraulic system (fig 4-1).
- b. Remove two screws and lockwashers securing support to upper guard (view A, fig 4-17).
- c. Remove five screws and lock-washers, securing upper guard to lower guard (view A). Remove upper guard.
- d. Remove two nuts, lockwashers, washers, and bolts securing guard to left rear fender (view A). Remove guard.
- e. Disconnect two seals and tubes connected to elbows (view B).
- f. Remove three screws, lockwashers, and nuts securing lower guard to left rear fender (view C). Remove lower guard.
- g. Remove two hose assemblies from reservoir assembly (view D).
- h. Remove two elbows from hose assemblies (view D).
- i. Remove tube assembly and hose from reservoir assembly (view E).
- j. Remove air vent filter (para 4-96).

k. Remove two nuts, washers, and lockwashers from reservoir assembly (view F).

l. Attach hoist to reservoir assembly, and remove reservoir assembly (view F).

4-61. Disassembly (Fig 4-18).

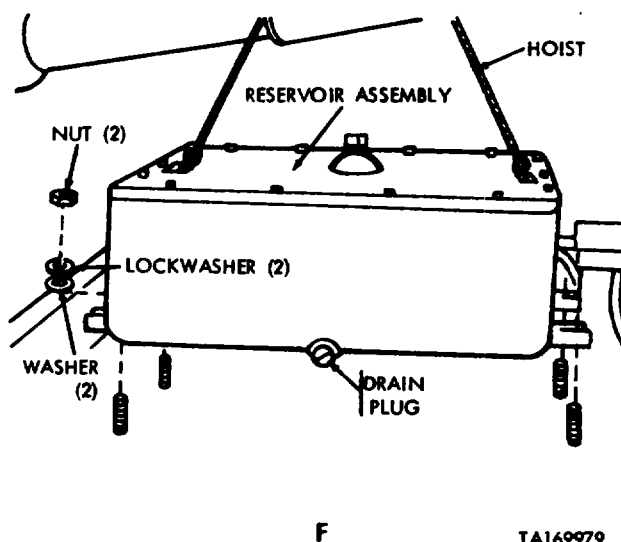
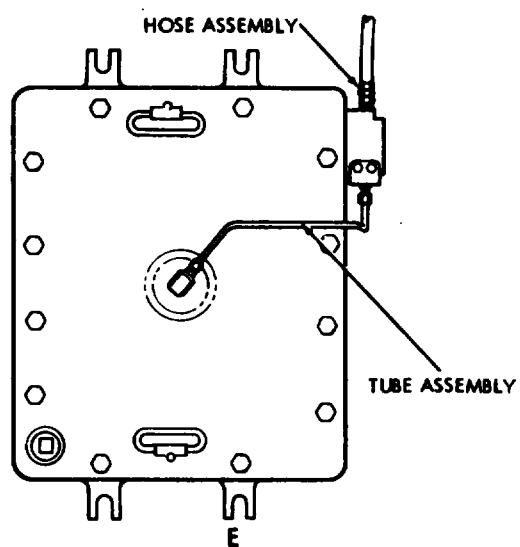
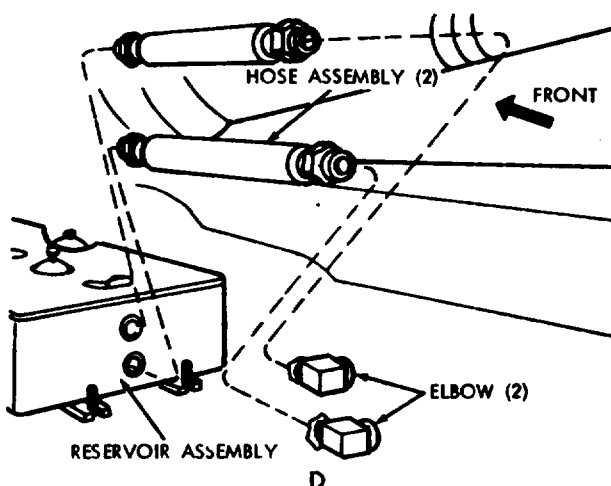
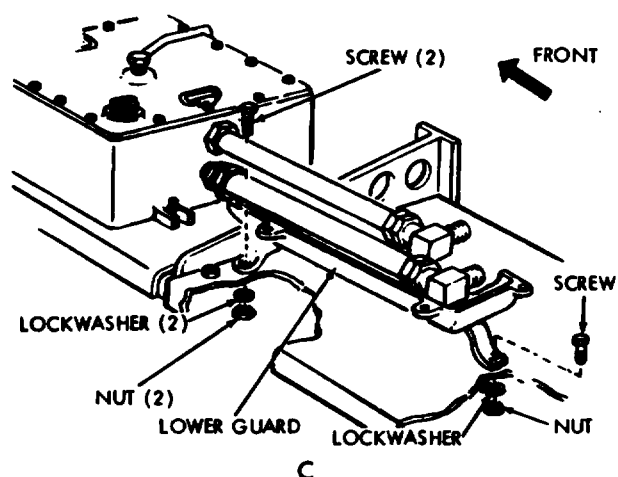
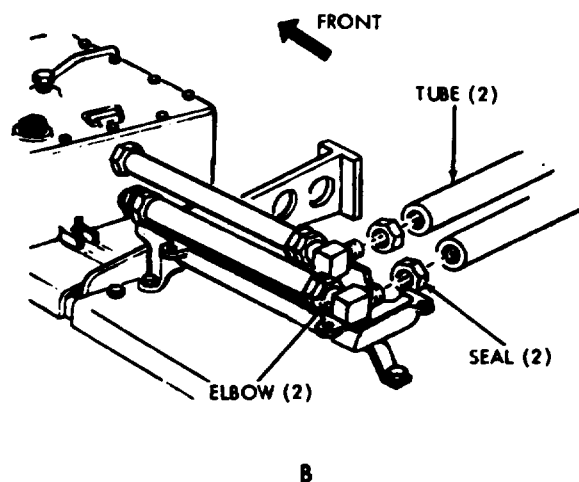
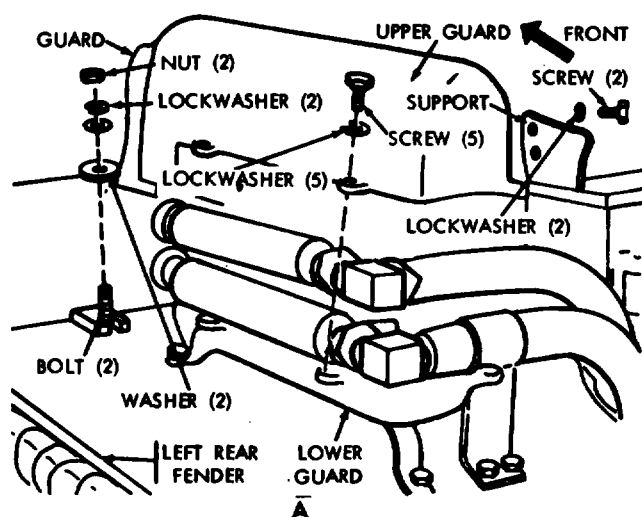
- a. Disconnect tube assembly from elbow (view A).
- b. Remove 14 screws and lockwashers securing cover assembly and gasket to reservoir, and remove cover assembly and gasket (view A).
- c. Remove plug and gage from cover assembly (view B).
- d. Remove four screws and lock-washers securing strainer element to cover assembly, and remove strainer element (view B).
- e. Remove two screws and seals securing manifold assembly inside reservoir, and remove manifold assembly (view C).
- f. Remove three screws, lockwashers, and washers securing baffle to reservoir, and remove baffle (view C).

4-62. Cleaning and Inspection.

- a. Clean all parts including housing mating surfaces using drycleaning solvent.
- b. Inspect all components for cracks or damage.
- c. Inspect machined surfaces for pitting or wear.
- d. Inspect remaining hardware for wear, damaged threads, and general serviceability. Replace components, as required.

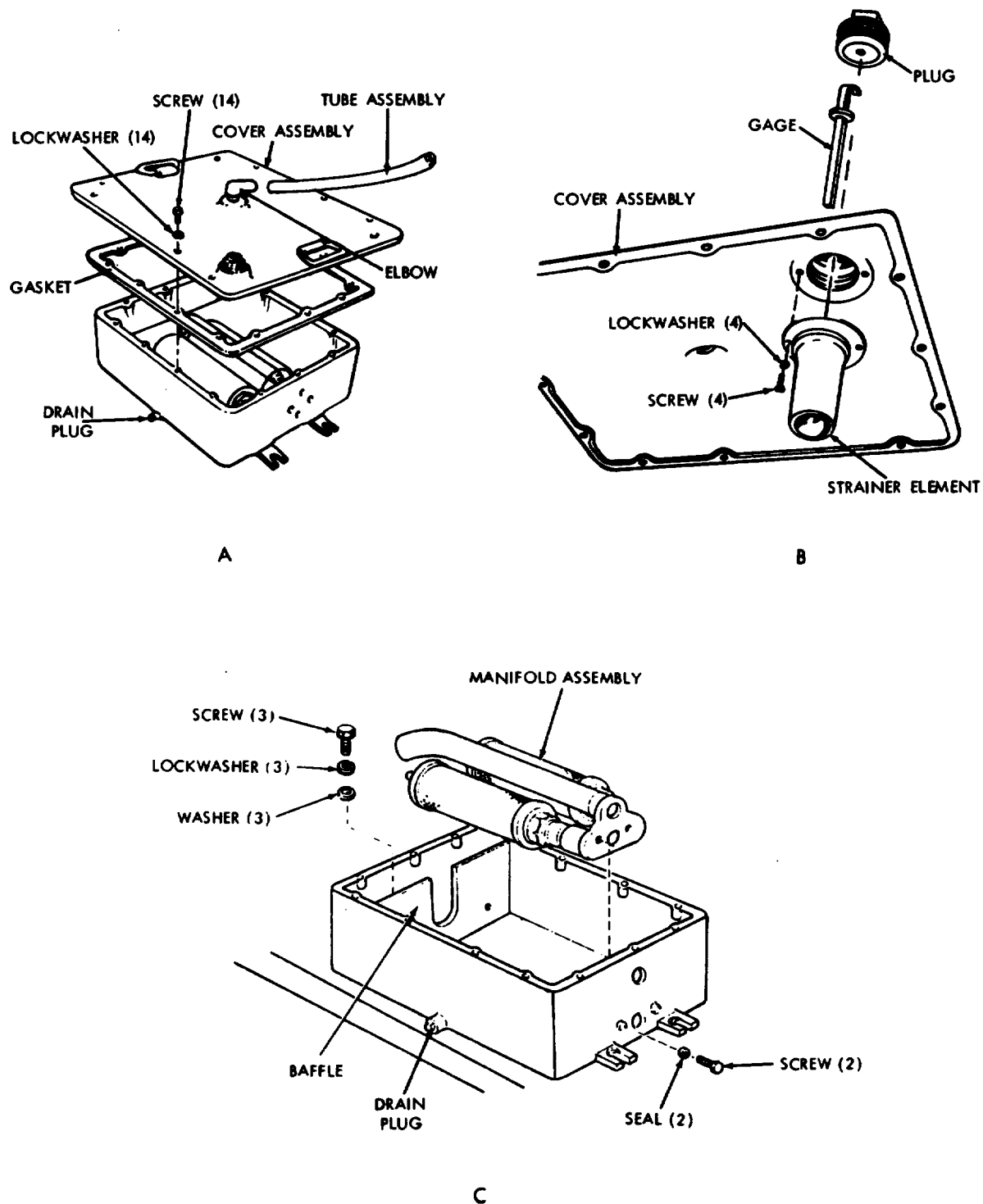
4-63. Repair (Fig 4-19).

- a. Disconnect two filters from manifold, and remove filters.



TA169979

Figure 4-17. Removal or installation of reservoir assembly.



TA169980

Figure 4-18. Disassembly or assembly of reservoir assembly.

- b. Disconnect tube from manifold, and remove tube.
- c. Disconnect two nipples from manifold, and remove nipples.
- d. Clean in accordance with paragraph 5-5.
- e. Connect two nipples to manifold.
- f. Connect tube to manifold.
- g. Connect two filters to manifold.

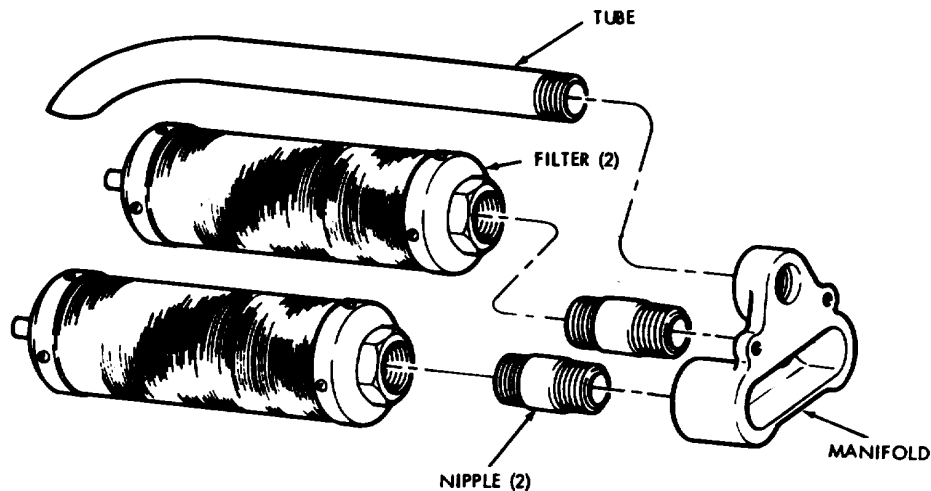
4-64. Assembly (Fig 4-18).

- a. Install baffle in reservoir, and secure with three screws, lockwashers, and washers (view C).
- b. Install manifold assembly inside reservoir, and secure with two screws and seals (view C).
- c. Install strainer element to cover assembly, and secure with four screws and lockwashers (view B).

- d. Install gage and plug to cover assembly (view B).
- e. Install gasket and cover assembly on reservoir, and secure with 14 screws and lockwashers (view A).
- f. Install tube assembly and connect to elbow (view A).

4-65. Installation (Fig 4-17).

- a. Attach hoist to reservoir assembly, and install reservoir assembly on left rear fender (view F).
- b. Install two washers, lockwashers, and nuts securing reservoir assembly to left rear fender (view F).
- c. Install air vent filter (para 4-100).
- d. Install tube assembly and hose to reservoir assembly (view E).
- e. Install two elbows to hose assemblies (view D).



TA169981

Figure 4-19. Repair of reservoir assembly manifold.

f. Install two hose assemblies to reservoir assembly (view D).

g. Install lower guard to left rear fender, and secure with three screws, lock-washers, and nuts (view C).

h. Connect two seals and tubes to elbows (view B).

i. Install guard to left rear fender, and secure with two bolts, lockwashers, washers, and nuts (view A).

j. Install upper guard to lower guard and secure with five screws and lockwashers (view A).

k. Install support to upper guard, and secure with two screws and lockwashers (view A).

l. Fill hydraulic system with oil (fig 3-1).

Section XVI. MAINTENANCE OF MAGNETIC CLUTCH

4-66. Description. The magnetic clutch is mounted in the vehicle as an integral part of the pump and drive assembly. The pump and drive assembly is composed of: (1) hydraulic pump assembly, (2) magnetic clutch, and (3) power takeoff right-angle drive.

CAUTION

Do not remove drain plugs or disconnect tubes while engine is running to prevent damage to hydraulic pump.

4-67. Removal (Fig 4-20)

a. Disconnect lines carefully to relieve pressure. Drain hydraulic system (fig 4-1).

b. Open rear grille doors and remove transmission shroud. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (MB0A1 RISE), or TM 9-2350-253-20-1 (M60A3).

c. Remove eight screws, lockwashers, four flanges, and two packings securing two hydraulic hose

assemblies to hydraulic pump assembly. Disconnect hoses (view A, fig 4-20).

d. Remove two screws, lockwashers, washers, and nuts securing hydraulic pump assembly mounting bracket to transmission mounting bracket (view A).

e. Disconnect electrical lead from magnetic clutch (view A).

f. Attach rope and suitable hoist (minimum capacity 250 lb), and apply tension on rope to support weight of unit (view B).

g. Remove five screws, lockwashers, and washers securing power takeoff assembly unit to transmission (view B).

h. Pull power takeoff assembly away from transmission to disengage right-angle drive from drive sprocket in transmission (view B).

i. Apply lift with hoist and remove power takeoff assembly and gasket from transmission (view B). Remove hoist and rope.

j. Remove four screws, lockwashers, and spacers securing mounting bracket to side of transmission, and remove mounting bracket (view C).

4-67. Disassembly (Fig 4-21).

a. Remove six nuts, washers, and studs securing hydraulic pump assembly to magnetic clutch, and remove pump assembly.

b. Remove eight nuts and lockwashers securing magnetic clutch cover and gasket, remove magnetic clutch assembly and gasket.

c. Using a 3/8-inch socket wrench, remove screw and lockwasher securing spider gear to drive gear. Disconnect spider gear from gear set of right-angle drive, and remove from clutch housing.

d. Remove six screws and lockwashers securing magnetic clutch to power takeoff right-angle drive, and remove magnetic clutch housing seal and gasket.

e. Remove two fittings, plugs, and gaskets from top cover of right-angle drive and magnetic clutch.

f. Remove two plugs from side and bottom of right-angle drive.

g. Remove two plugs from side and bottom of magnetic clutch housing.

h. Remove sprocket assembly from power takeoff opening by pulling from power takeoff drive gear.

i. Remove two gasket and ring assemblies from transmission power takeoff sprocket opening by removing two screws and lockwashers.

f. Remove mounting bracket from hydraulic pump assembly by removing two washers and nuts.

4-69. Assembly (Fig -21).

a. Install two gaskets and ring assembly to transmission power takeoff sprocket opening.

b. Install two plugs in side and bottom of magnetic clutch housing.

c. Install two plugs in side and bottom of power takeoff assembly right-angle drive.

d. Install two gaskets, plugs, and fittings in top cover of power takeoff assembly right-angle drive and magnetic clutch.

e. Position magnetic clutch to power takeoff right-angle drive after installing gasket and seal. Secure with six screws and lock washers.

f. Insert spider gear into magnetic clutch housing.

g. Using a 3/8-inch socket wrench, install screw and lockwasher securing spider gear to gear set of right-angle drive in clutch housing.

h. Position magnetic clutch assembly and gasket in housing, and secure with eight nuts and lockwashers.

i. Position hydraulic pump assembly with gasket to magnetic clutch, and secure with six nuts, washers, and studs.

l. Insert sprocket assembly on power takeoff drive gear.

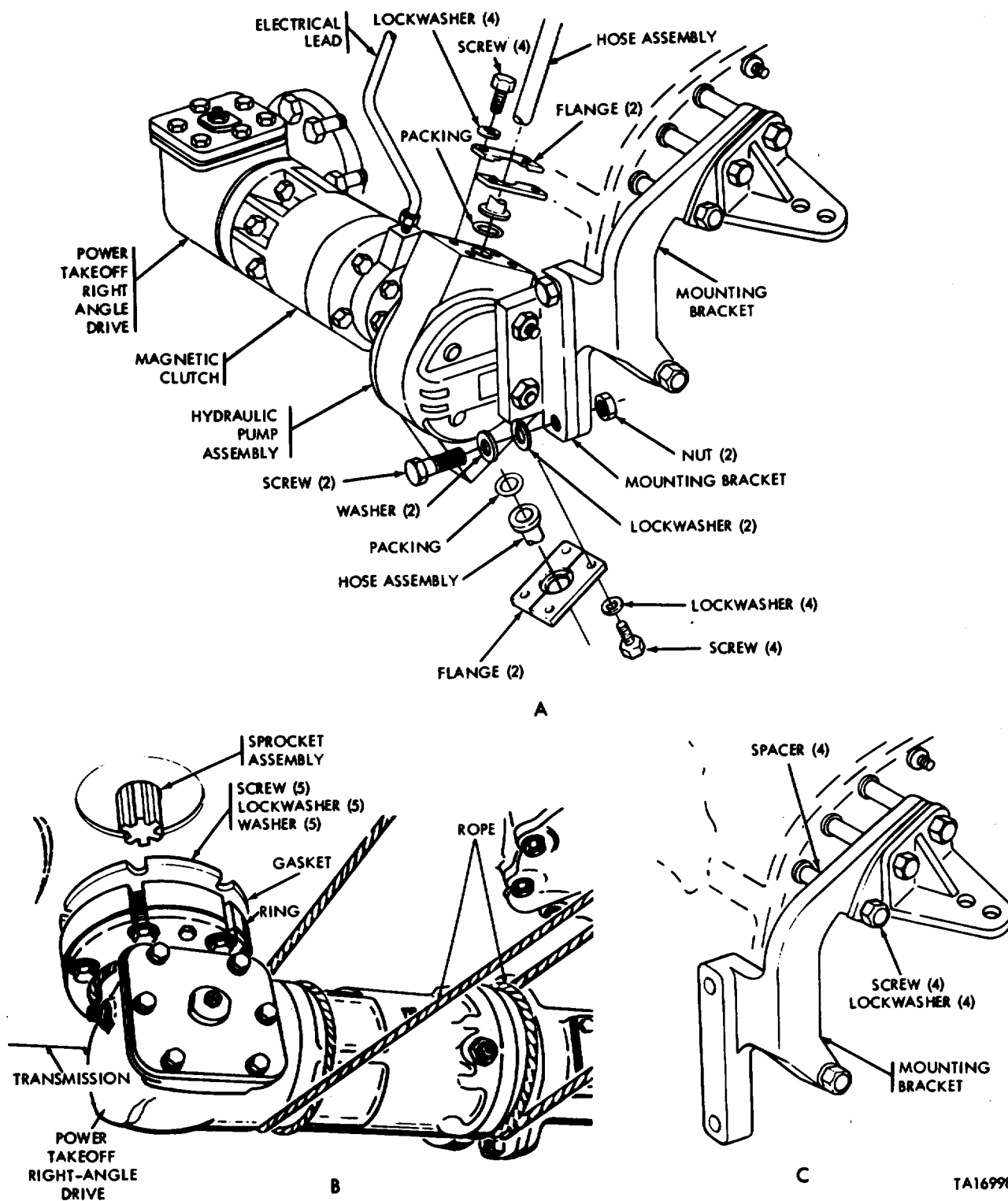
k. Install mounting bracket with two nuts and lockwashers.

4-70. Installation (Fig 4-20).

]

a. Position mounting bracket on side of transmission, and secure with four screws, lockwashers, and spacers (view C).

b. Attach rope and suitable hoist (minimum capacity 250 lb) and lift power takeoff assembly and gasket into position on transmission (view B).



TA169982

Figure 4-20. Removal or installation of power takeoff assembly.

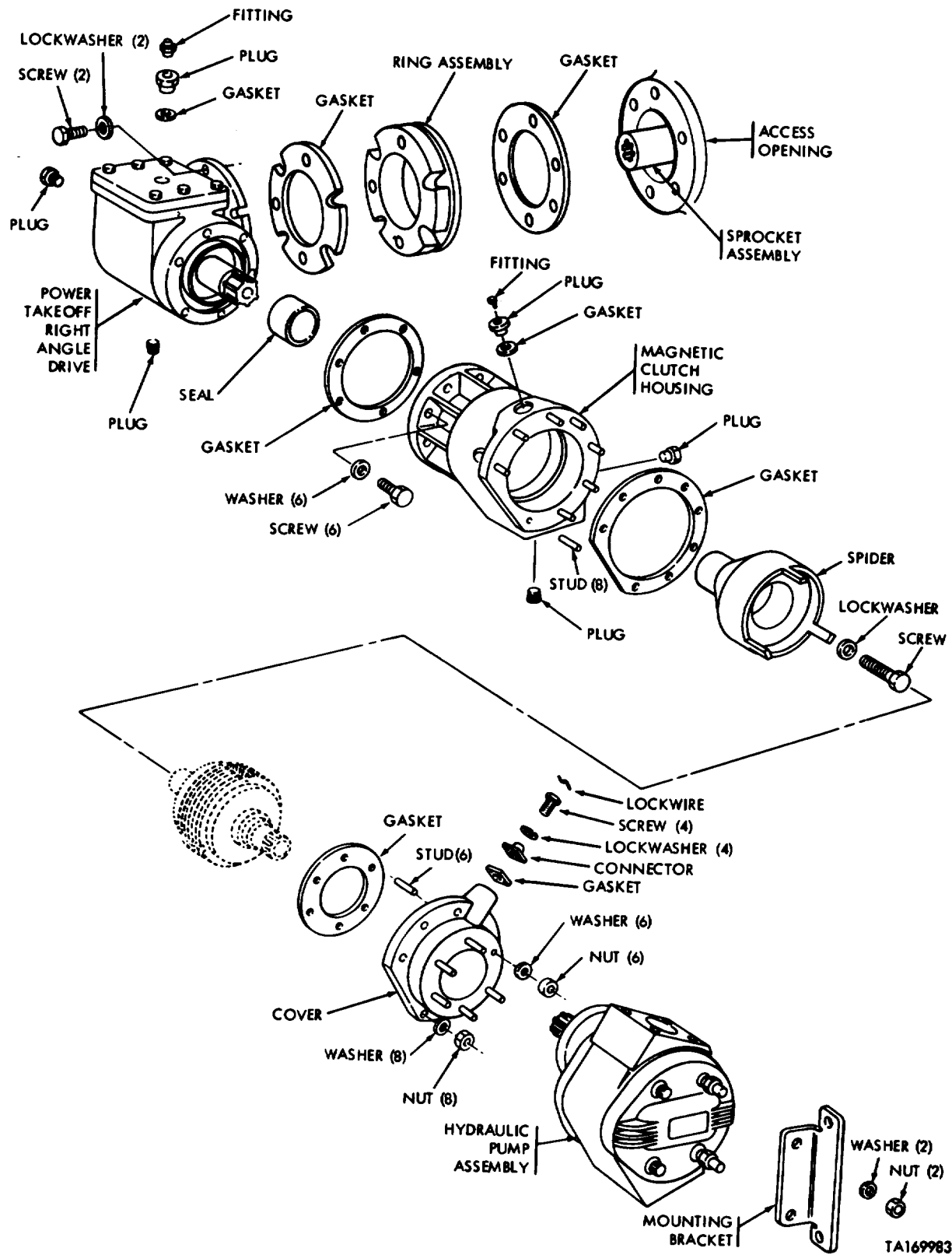


Figure 4-21. Disassembly or assembly of power takeoff assembly right-angle drive, magnetic clutch, and hydraulic pump assembly.

c. Rest hydraulic pump assembly mounting bracket on transmission bracket. Align and install power takeoff assembly right-angle drive sprocket with drive sprocket spline in transmission (view B).

d. Install five screws, lockwashers, and washers and secure power takeoff assembly to transmission (view B).

e. Install two screws, lockwashers, washers, and nuts securing hydraulic pump assembly mounting bracket to transmission mounting bracket (view A).

f. Remove hoist and rope from power takeoff assembly.

g. Connect electrical lead to magnetic clutch (view A).

h. Connect two hydraulic hose assemblies to hydraulic pump assembly, and secure with four flanges, two packings, eight screws, and lockwashers (view A).

i. Fill hydraulic system (fig 3-1).

j. Install transmission shroud, and close rear grille doors. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

Section XVII. MAINTENANCE OF POWER TAKEOFF RIGHT-ANGLE DRIVE

4-71. Description. The power takeoff right-angle drive is mounted in the vehicle as an integral part of the pump and drive assembly. The pump and drive assembly is composed of: (1) hydraulic pump assembly, (2) magnetic clutch, and (3) power takeoff right-angle drive.

CAUTION

Do not remove drain plugs or disconnect tubes while engine is running to prevent damage to hydraulic pump.

4-72. Removal (Fig 4-20).

a. Disconnect lines carefully to relieve pressure. Drain hydraulic system (fig 4-1).

b. Open rear grille doors, and remove transmission shroud. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

c. Remove eight screws, lockwashers, four flanges, and two packings securing hydraulic hose assemblies to hydraulic pump assembly, and disconnect hoses (view A).

d. Remove two screws, lockwashers, washers, and nuts securing hydraulic pump assembly mounting bracket to transmission mounting bracket (view A).

e. Disconnect electrical lead from magnetic clutch (view A).

f. Attach rope and suitable hoist (minimum capacity 250 lb), and apply tension on rope to support weight of unit (view B).

g. Remove five screws, lockwashers, and washers securing power takeoff assembly unit to transmission (view B).

h. Pull power takeoff assembly away from transmission to disengage right-angle drive from drive sprocket in transmission (view B).

i. Apply lift with hoist and remove power takeoff assembly and gasket from transmission (view B). Remove hoist and rope.

4-73. Disassembly (Fig 4-21).

a. Remove six nuts, washers, and studs securing hydraulic pump assembly to magnetic clutch, and remove pump assembly.

b. Remove eight nuts and lockwashers, securing magnetic clutch cover and gasket, remove magnetic clutch cover and gasket.

c. Using a 3/8-inch socket wrench, remove screw and lockwasher securing spider gear and seal to drive gear. Disconnect spider gear from magnetic clutch housing.

d. Remove six screws and lockwashers securing magnetic clutch to power takeoff right-angle drive. Remove magnetic clutch housing seal and gasket from power takeoff right-angle drive.

e. Remove power takeoff sprocket assembly.

f. Remove gasket and ring assembly by removing two screws and lockwashers.

4-74. Assembly (Fig 4-21.)

a. Position magnetic clutch housing assembly to power takeoff right-angle drive, and secure with six screws, lockwashers, seal, and gasket.

b. Insert spider gear on right-angle drive gear set in clutch housing.

c. Using a 3/8-inch socket wrench, install screw and lockwasher securing spider gear and seal to drive gear.

d. Install clutch assembly in housing, and secure with eight nuts and lockwashers.

e. Install pump assembly to magnetic clutch, and secure with six nuts, washers, and gasket.

f. Install gasket, ring assembly with two screws and lockwashers.

g. Install power takeoff sprocket assembly.

4-75. Installation (Fig 4-20)

a. Attach rope and suitable hoist (minimum capacity 250 lb), and lift power takeoff assembly into position on transmission (view B).

b. Rest hydraulic pump assembly mounting bracket on transmission bracket. Install gasket. Align power takeoff assembly right-angle drive with drive sprocket opening on transmission (view B). Position power takeoff splines to align with sprocket splines.

c. Install five screws, lockwashers, and washers securing power takeoff assembly to transmission (view B).

d. Install two screws, lockwashers, washers, and nuts securing hydraulic pump assembly mounting bracket to transmission mounting bracket (view A).

e. Remove hoist and rope from power takeoff assembly.

f. Connect electrical lead to magnetic clutch (view A).

g. Connect two hydraulic hose assemblies to hydraulic pump assembly, and secure with four flanges, two packings, eight screws, and lockwashers (view A).

h. Install transmission shroud, and close rear grille doors. See TM 9 -2350-215- 20 (M60, M60A1), TM 9-2350-257-20-1 (M60AI RISE), or TM 9-2350-253-20-1 (M60A3).

i. Fill hydraulic system (fig 3-1).

Section XVIII. MAINTENANCE OF HYDRAULIC PUMP ASSEMBLY

4-76. Description. The hydraulic pump assembly is mounted in the vehicle as an integral part of the pump and drive assembly. The pump and drive assembly is

composed of: HYDRAULIC PUMP ASSEMBLY (1) hydraulic pump assembly, (2) magnetic clutch, and (3) power takeoff right-angle drive.

CAUTION

Do not remove drain plugs or disconnect tubes while engine is running to prevent damage to hydraulic pump.

4-77. Removal (Fig 4-20).

a. Disconnect lines carefully to relieve pressure. Drain hydraulic system (fig 4-1).

b. Open rear grille doors and remove transmission shroud. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

c. Remove eight screws, lockwashers, four flanges, and two packings securing hydraulic hose assemblies to hydraulic pump assembly, and disconnect hoses (view A).

d. Remove two screws, lockwashers, washers, and nuts securing hydraulic pump assembly mounting bracket to transmission mounting bracket (view A).

e. Disconnect electrical lead from magnetic clutch (view A).

f. Attach rope and suitable hoist (minimum capacity 250 lb), and apply tension on rope to support weight of unit (view B).

g. Remove five screws, lockwashers, and washers securing power takeoff assembly unit to transmission (view B).

h. Pull power takeoff assembly away from transmission to disengage right-angle drive from drive sprocket in transmission (view B).

i. Apply lift with hoist and remove power takeoff assembly and gasket from transmission (view B). Remove hoist and rope.

4-78 Disassembly (Fig 4-21)

a. Remove six nuts, washers, and studs securing hydraulic pump assembly to magnetic clutch, and remove hydraulic pump assembly and gasket.

b. Remove two nuts and lockwashers, and remove mounting bracket.

4-79. Assembly (Fig 4-21).

a. Install mounting bracket and secure with two nuts and lockwashers.

b. Position hydraulic pump assembly and gasket to magnetic clutch, and secure with six nuts, washers, and studs.

4-80. Installation (Fig 4-20).

a. Attach rope and suitable hoist (minimum capacity 250 lb), and lift power takeoff assembly and gasket into position on transmission (view B).

b. Rest hydraulic pump assembly mounting bracket on transmission bracket. Align and install power takeoff assembly right-angle drive sprocket with drive sprocket spline in transmission (view B).

c. Install five screws, lockwashers, and washers securing power takeoff assembly to transmission (view B).

d. Insure that mounting holes in hydraulic pump assembly mounting bracket are aligned with holes in transmission mounting bracket (view A).

e. Install two screws, lockwashers, and nuts securing hydraulic pump assembly mounting bracket to transmission mounting bracket (view A).

f. Remove hoist and rope from power takeoff assembly.

g. Connect electrical lead to magnetic clutch (view A).

h. Connect two hydraulic hose assemblies to hydraulic pump assembly, and secure with four flanges, two packings, eight screws, and lockwashers (view A).

i. Fill hydraulic system (fig 3-1), and check for leaks.

j. Install transmission shroud, and close rear grille doors. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

Section XIX. MAINTENANCE OF POWER TAKEOFF SPROCKET ASSEMBLY

4-81. Description. The power takeoff sprocket assembly is mounted to the power takeoff of the transmission. This sprocket is used to transfer power from the transmission to the right-angle drive, thus providing power for the M9 bulldozer hydraulic system.

CAUTION

Do not remove drain plugs or disconnect tubes while engine is running to prevent damage to hydraulic pump.

4-82. Removal (Fig 4-20).

a. Disconnect lines carefully to relieve pressure. Drain hydraulic lines (fig 4-1).

b. Open rear grille doors and remove transmission shroud. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

c. Remove eight screws, lockwashers, four flanges, and two packings securing hydraulic hose assemblies to hydraulic pump assembly, and disconnect hoses (view A).

d. Remove two screws, lockwashers, washers, and nuts securing hydraulic pump assembly mounting bracket to transmission mounting bracket (view A).

e. Disconnect electrical lead from magnetic clutch (view A).

f. Attach rope and suitable hoist (minimum capacity 250 lb), and apply tension on rope to support weight of unit (view B).

g. Remove five screws, lockwashers, and washers securing power takeoff assembly unit to transmission (view B).

h. Pull power takeoff assembly away from transmission to disengage right-angle drive from drive sprocket in transmission (view B).

i. Apply lift with hoist to remove power takeoff assembly and gasket from transmission (view B). Remove hoist and rope.

J. Remove sprocket assembly, two screws, gasket and ring assembly from transmission power takeoff access opening (figs 4-21, 4-22).

4-83. Disassembly (Fig 4-22).

a. Remove pin securing chain together (the two sprockets are held together by the chain).

b. Remove sprockets and chain.

4-84. Assembly (Fig 4-22).

a. Position two sprockets together and assemble with chain.

b. Install pin securing chain.

4-85. Installation.

a. Install ring assembly and gasket to transmission power takeoff access opening, J and secure with two screws (fig 4-21). Install sprocket assembly to right-angle drive.

b. Attach rope and suitable hoist (minimum capacity 250 lb), and lift power takeoff assembly and gasket into position on transmission (view B, fig 20).

c. Rest hydraulic pump assembly mounting bracket on transmission bracket. Align and insert power takeoff assembly right-angle drive sprocket with drive sprocket spline in transmission (view B).

d. Install five screws, lockwashers, and washers securing power takeoff assembly to transmission (view B). Insure that mounting holes in hydraulic pump assembly mounting bracket are aligned with holes in transmission mounting bracket (view A).

e. Install two screws, lockwashers, and nuts securing hydraulic pump assembly mounting bracket to transmission mounting bracket (view A).

f. Remove hoist and rope from power takeoff assembly.

g. Connect electrical lead to magnetic clutch (view A).

h. Connect two hydraulic hose assemblies to hydraulic pump assembly, and secure with four flanges, two packings, eight screws, and lockwashers (view A).

i. Fill hydraulic system (fig 3-1). Check for leaks.

j. Install transmission shroud, and close rear grille doors. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

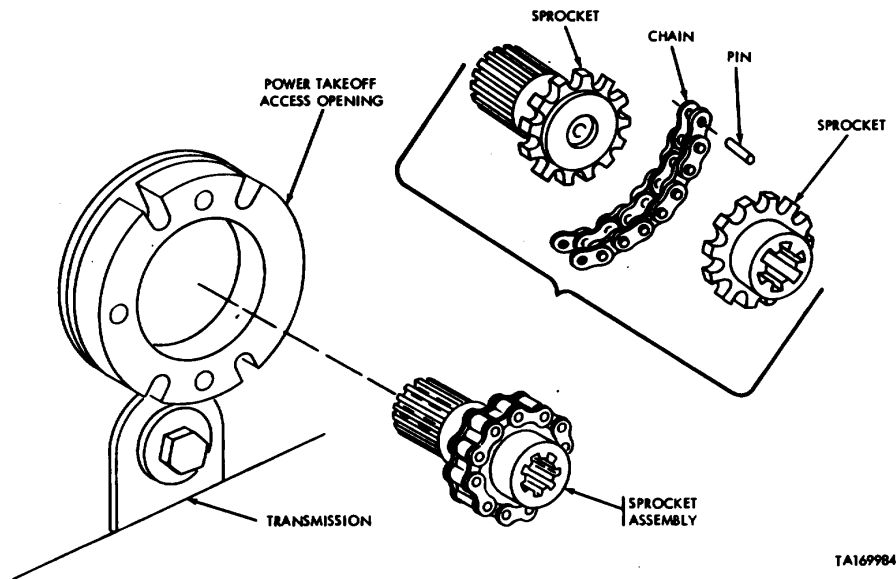


Figure 4-22. Disassembly or assembly of power takeoff sprocket assembly.

Section XX. MAINTENANCE OF BLADE CONTROL LEVER AND LINKAGE

4-86. Description. The blade control lever and linkage mechanically operates the manifold control valve. The blade control lever is located in the driver's compartment. The linkage passes through the hull floor and extends under the vehicle to the manifold.

4-87. Blade Control Linkage

a. Removal

- (1) Drop escape hatch.
- (2) Remove nut (1, fig 4-23) securing rod assembly (2) to bottom of control lever (23).

(3) Remove nut (3) securing rod assembly (2) to arm (4), and remove rod assembly.

(4) Remove nut (5), lockwasher (6), and washer (7) securing arm (4) to shaft (8), and remove arm and key (9).

(5) Remove nut (10), lockwasher (11), and washer (12) securing shaft (8) to arm (13), and remove shaft and key (9).

(6) Remove nut (14) securing arm (13) to rod assembly (15), and remove arm.

(7) Remove nut (16) securing rod assembly (15) to lever (17), and remove rod assembly.

(8) Remove nut (18), lockwasher (19), washer (20), securing lever (17) to shaft (22) and remove lever (17) and key (21).

(9) Remove six screws (18, fig 4-24) and lockwashers (17) securing cover (16) and gasket (15) to guard, and remove cover and gasket.

(10) Remove nut (1) securing rod assembly (2) to arm (3).

(11) Remove nut (9) securing rod assembly (2) to bracket (10), and remove rod assembly.

(12) Remove nut (11) securing rod assembly (12) to bracket (10).

(13) Remove four screws (13) and lockwashers (14) securing bracket (10) to guard, and remove bracket.

(14) Remove 12 screws (6, fig 4-25) and lockwashers (5) securing manifold cover (7) and gasket (8), and remove cover and gasket.

(15) Remove four screws (1) and lockwashers (2) securing control valve guard cover (3) and gasket (4).

(16) Remove nut (1, fig 4-26) securing rod assembly (2) to link assembly (3).

(17) Pull rod assembly (2) through guard (13) (toward torsion bars), and remove rod assembly.

(18) Remove cotter pin (4) and pin (5) securing clevis (6) to control valve located in manifold.

(19) Remove bolt (7) securing rod (8), and remove rod assembly (11).

(20) Remove rod end (10) and two nuts (9) from rod (8).

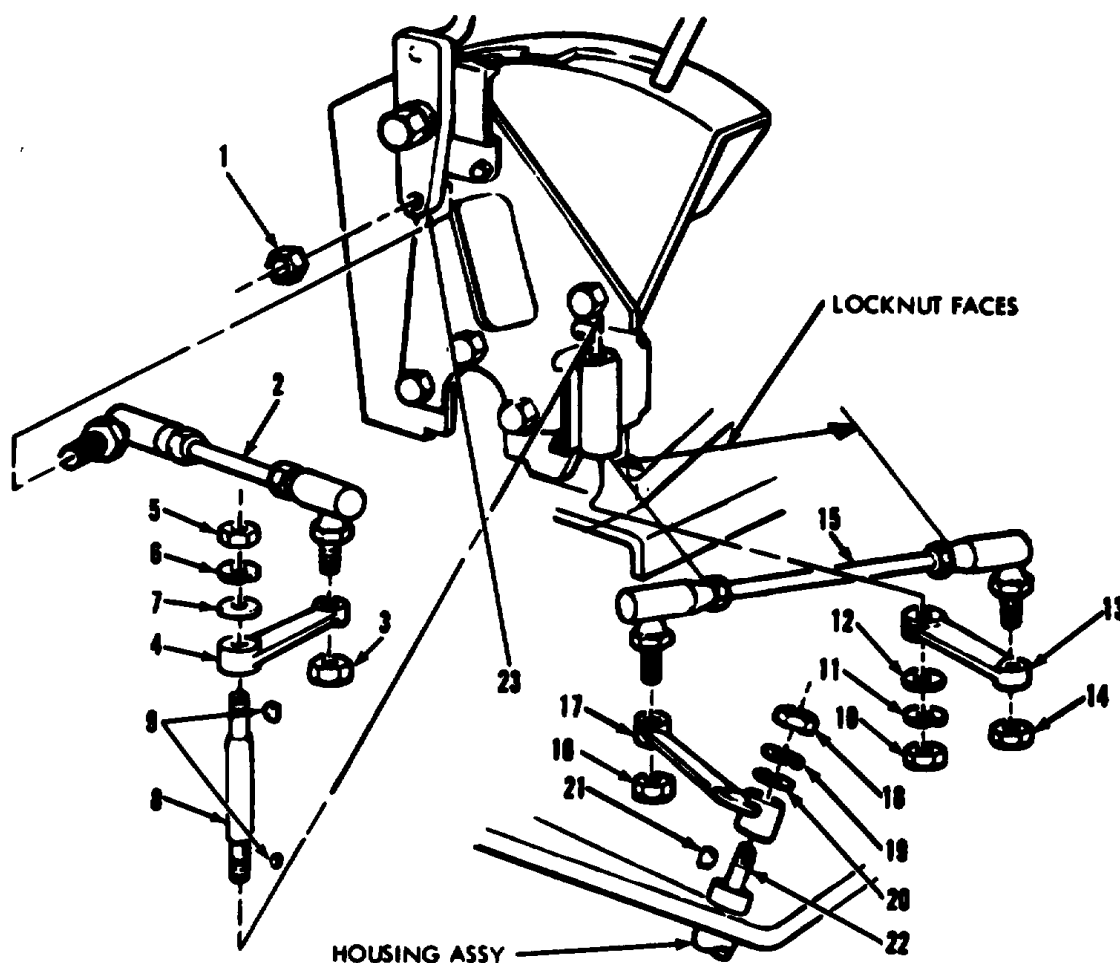
(21) Remove bolt (12) securing link assembly (3) to guard and remove link assembly.

NOTE

Perform following steps only if required.

(22) Remove housing assembly (1, fig 4-27), shaft (2), and lockwasher (3) from guard (4).

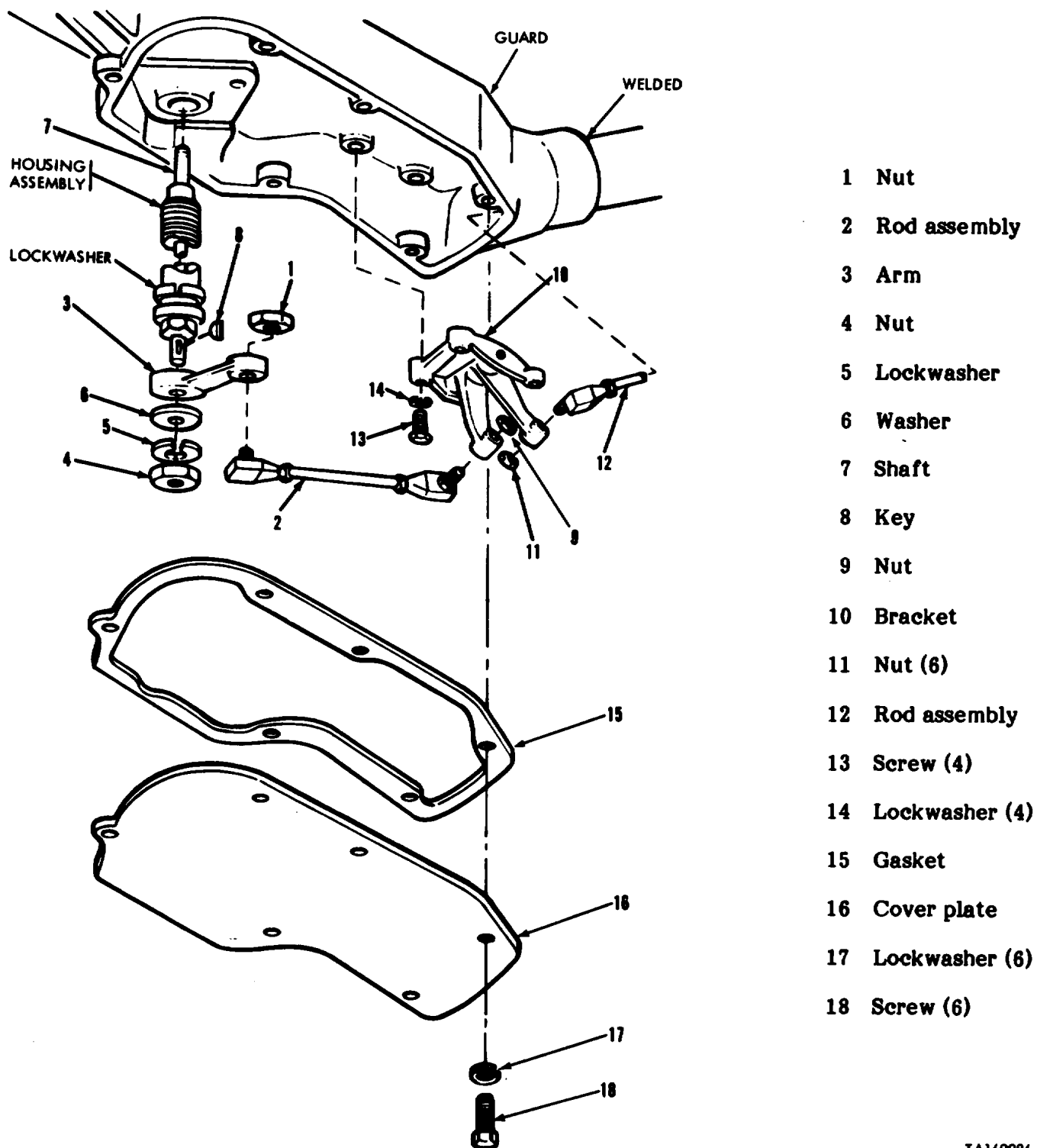
(23) Remove two screws (5) and lockwashers (6) securing guard (4) to front right torsion bar housing. Remove guard.



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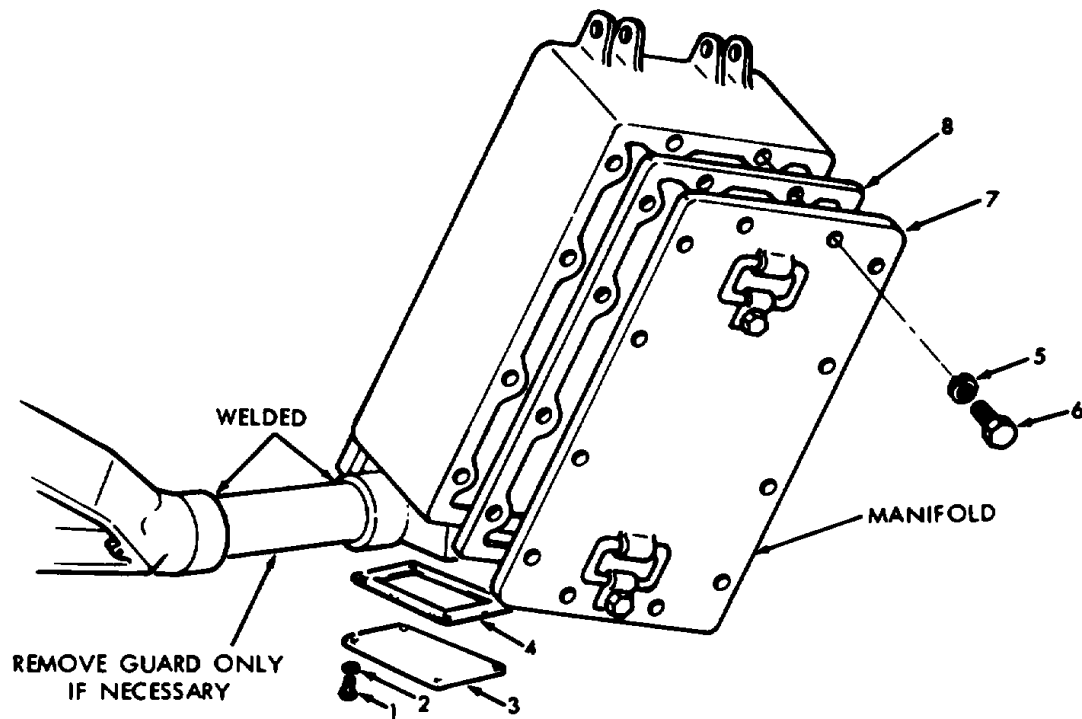
1 Nut	9 Key (2)	17 Lever
2 Rod assembly	10 Nut	18 Nut
3 Nut	11 Lockwasher	19 Lockwasher
4 Arm	12 Washer	20 Washer
5 Nut	13 Arm	21 Key
6 Lockwasher	14 Nut	22 Shaft
7 Washer	15 Rod assembly	23 Control lever
8 Shaft	16 Nut	

Figure 4-23. Removal or installation of control linkage



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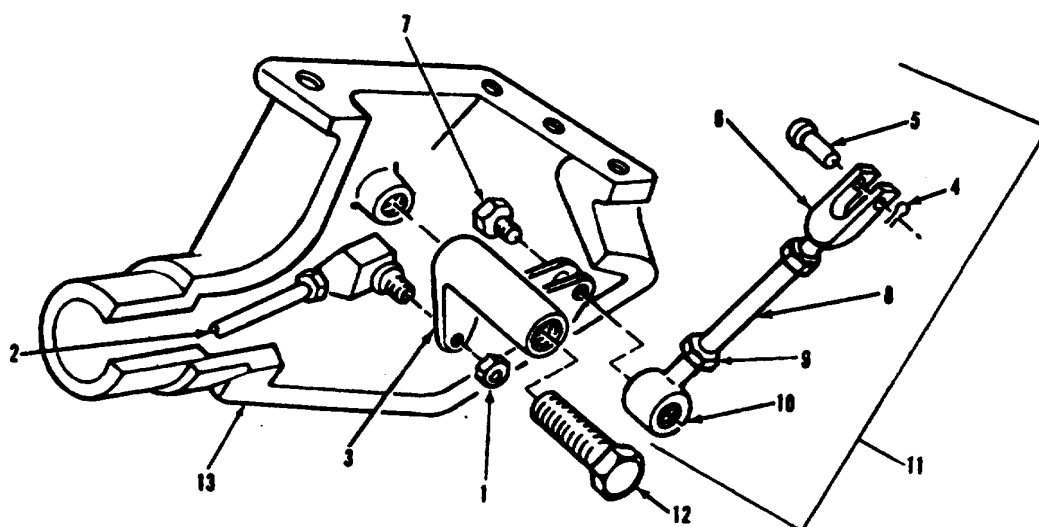
Figure 4-24. Removal or installation of bracket and control rods.



TA169987

- 1 Screw (4)
- 2 Lockwasher (4)
- 3 Cover
- 4 Gasket
- 5 Lockwasher (12)
- 6 Screw (12)
- 7 Cover
- 8 Gasket

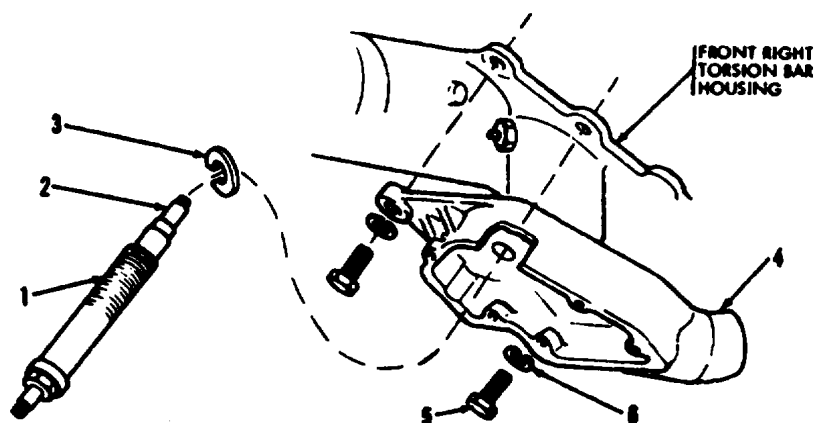
Figure 4-25. Removal or installation of guard to manifold.



TA169988

- | | | |
|-----------------|-----------|-----------------|
| 1 Nut | 6 Clevis | 10 Rod end |
| 2 Rod assembly | 7 Bolt | 11 Rod assembly |
| 3 Link assembly | 8 Rod | 12 Bolt |
| 4 Cotter pin | 9 Nut (2) | 13 Guard |
| 5 Pin | | |

Figure 4-26. Removal or Installation of control valve linkage.



TA169989

- | | | |
|--------------------|--------------|------------------|
| 1 Housing assembly | 3 Lockwasher | 5 Screw (2) |
| 2 Shaft | 4 Guard | 6 Lockwasher (2) |

Figure 4-27. Removal or installation of front right torsion bar housing guard.

b. Installation

NOTE

Perform steps 1 and 2 only if removed.

(1) Position guard (4, fig 4-27) to front right torsion bar housing, and secure with two screws (5) and lockwashers (6). Secure other side of guard to manifold with six screws and gasket.

(2) Install housing assembly (1), shaft (2), and lockwasher (3) into guard (4).

(3) Install rod end (10, fig 4-26) and two nuts (9) to rod (8).

(4) Install link assembly (3) to guard, and secure with bolt (12).

(5) Adjust rod assembly (8) length for proper operation.

(6) Install rod assembly (8) to link assembly (3), and secure with screw (7).

NOTE

Rod assembly (8) length (2-15/16 inches) is measured between faces of two locknuts.

(7) Install clevis (6) to control valve located in manifold, and secure with pin (5) and cotter pin (4).

(8) Insert rod assembly (2) through guard.

(9) Install rod assembly (2) to link assembly (3), and secure with nut (1).

(10) Install bracket (10, fig 4-24) to guard, and secure with four screws (13) and lockwashers (14).

(11) Install rod assembly (12) to bracket (10), and secure with nut (11).

(12) Install arm (3) on housing assembly with key (8), washer (6), lockwasher (5), and nut (4).

(13) Install rod assembly (2) to bracket (10), and secure with nut (9).

NOTE

Rod assembly (2) length (3-3/16 inches) is measured between faces of two locknuts.

(14) Install rod assembly (2) to arm (3), and secure with nut (1).

(15) Insert key (21) into shaft (22); install lever (17, fig 4-23) on shaft (22), and secure with nut (18), lockwasher (19), and washer (20).

NOTE

Rod assembly (15) length (5-7/8 inches) is measured between faces of two locknuts.

(16) Install rod assembly (15) to lever (17), and secure with nut (16).

(17) Install arm (13) to rod assembly (15), and secure with nut (14).

(18) Install shaft (8) to arm (13), insert key (9), and secure with nut (10), lockwasher (11), and washer (12).

(19) Install arm (4) to shaft (8); insert key (9), and secure with nut (5), lockwasher (6), and washer (7).

NOTE

Rod assembly (2) length (3-7/8 inches) is measured between faces of two locknuts.

(20) Install rod assembly (2) to arm (4), and secure with nut (3).

(21) Install rod assembly (2) to bottom of control lever, and secure with nut (1).

c. Adjustment.

(1) Move lever control and insure that it shifts freely from one position to the other. Re-adjust rod assemblies, if necessary.

(2) Install manifold cover (7, fig 4-25) and secure with 12 screws (6) and gasket (8) and lockwashers (5).

(3) Install cover (3) and gasket (4) to guard, and secure with four screws (1) and lockwashers (2).

4-88. Blade Control Assembly.

a. Removal.

(1) Remove nut (1, fig 4-23) securing rod assembly (2) to control lever (23), and remove rod assembly.

(2) Remove screw (1, fig 4-28), lockwasher (2), and washer (3) securing lever control (4), and remove lever control.

(3) Remove two screws (5) securing indicator (6) to bracket assembly (7), and remove indicator.

(4) Remove screw (8) and lockwasher (9) securing bracket assembly (7) to shift lever bracket.

(5) Remove three screws (10) and washers (11) securing bracket assembly (7) to shift lever bracket.

(6) Remove screw (12), lockwasher (13), and nut (14) securing bracket assembly (7) to shift lever bracket, and remove bracket assembly.

b. Installation.

(1) Position bracket assembly (7, J fig 4-28) on shift lever bracket and secure with screw (12), lockwasher (13) and nut (14).

(2) Install three screws (10) and washers (11) securing bracket assembly (7) to shift lever bracket.

(3) Install screw (8) and lockwasher (9) securing bracket assembly (7) to shift lever bracket.

(4) Position indicator (6) on bracket assembly (7), and secure with two screws (5).

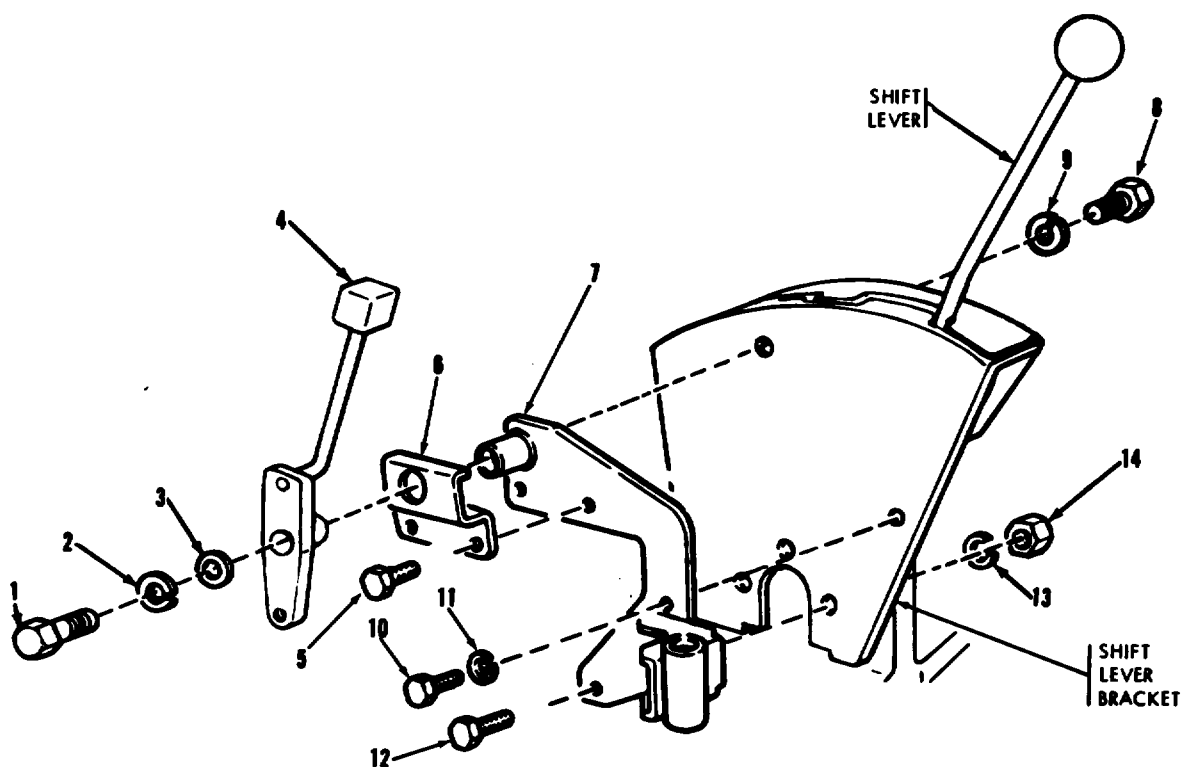
(5) Position lever (4) on indicator (6), and secure with screw (1), lockwasher (2), and washer (3).

(6) Install rod assembly (2, fig 4-23) to control lever (23), and secure with nut (1).

c. Adjustment.

(1) Bend control lever shaft to provide 2-5/8 inches clearance between shift lever handle and bulldozer control lever.

(2) Move control lever and insure that it shifts freely from one position to the other.



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- | | |
|--------------------|---------------|
| 1 Screw | 8 Screw |
| 2 Lockwasher | 9 Lockwasher |
| 3 Washer | 10 Screw (3) |
| 4 Lever | 11 Washer (3) |
| 5 Screw (2) | 12 Screw |
| 6 Indicator | 13 Lockwasher |
| 7 Bracket assembly | 14 Nut |

Figure 4-28. Removal or installation of blade control assembly.

Section XXI. MAINTENANCE OF ELECTRICAL SYSTEM

4-89. Description. The magnetic clutch is operated electrically by the switch mounted on the master control panel in the driver's compartment. The electrical system consists of: (1) electrical switch, (2) lamp, (3) circuit breaker, (4) leads, (5) connectors, and (6) bracket.

4-90. Hydraulic Pump Electrical Switch.

a. Removal (Fig 4-29).

(1) Place MASTER BATTERY switch in OFF position.

(2) Open turret platform access door, and disconnect battery cables. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350257-20-1 (M60A1 RISE), or TM 9-2350-25320-1 (M60A3).

(3) Disconnect two electrical lead assembly connectors from hydraulic pump switch.

(4) Remove two screws and lockwashers securing switch to bracket, and remove switch.

b. Installation (Fig 4-29).

(1) Align the hydraulic pump switch with the ON position up, on bracket, and secure with two screws and lockwashers.

(2) Connect electrical lead assemblies to switch.

(3) Connect battery cables, and close turret platform access door. See TM 92350-215-20 (M60, M60A1), TM 9-2350-25720-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

4-91. Hydraulic Pump Indicator Lamp Assembly.

a. Removal (Fig 4-29).

(1) Place MASTER BATTERY switch in OFF position.

(2) Open turret platform access door, and disconnect battery cables. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350257-20-1 (M60A1 RISE), or TM 9-2350-25320-1 (M60A3).

(3) Disconnect lead assembly connector from indicator lamp assembly.

(4) Unscrew lens from lamp assembly, and remove lens and preformed packing.

(5) Remove two screws and lockwashers securing lamp assembly to bracket, and remove lamp assembly from bracket.

b. Repair (Fig 4-30).

(1) Disconnect lamp assembly. Remove nut, washer, and bracket from housing if necessary.

(2) Clean lens with soft, moist, lint-free cloth, and dry.

(3) Remove any dirt or corrosion from lamp socket and connector terminals.

(4) Inspect preformed packing and gasket for cuts, breaks, or excessive wear.

(5) Replace lamp if burned out.

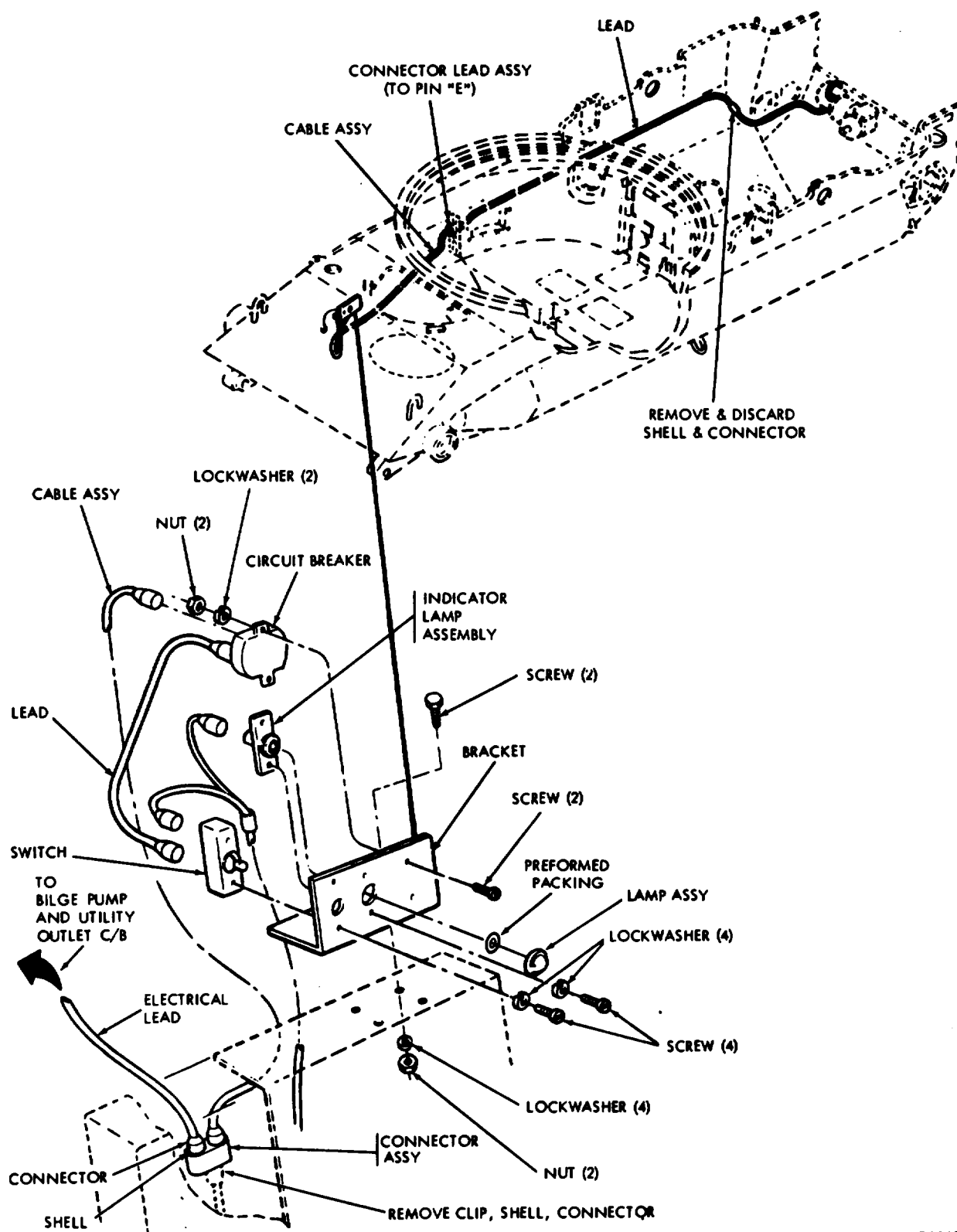
(6) Install housing to rear of mounting bracket and secure with washer and nut.

(7) Replace lens if broken or deeply scored. Use new preformed packing and gasket as required.

c. Installation (Fig 4-29).

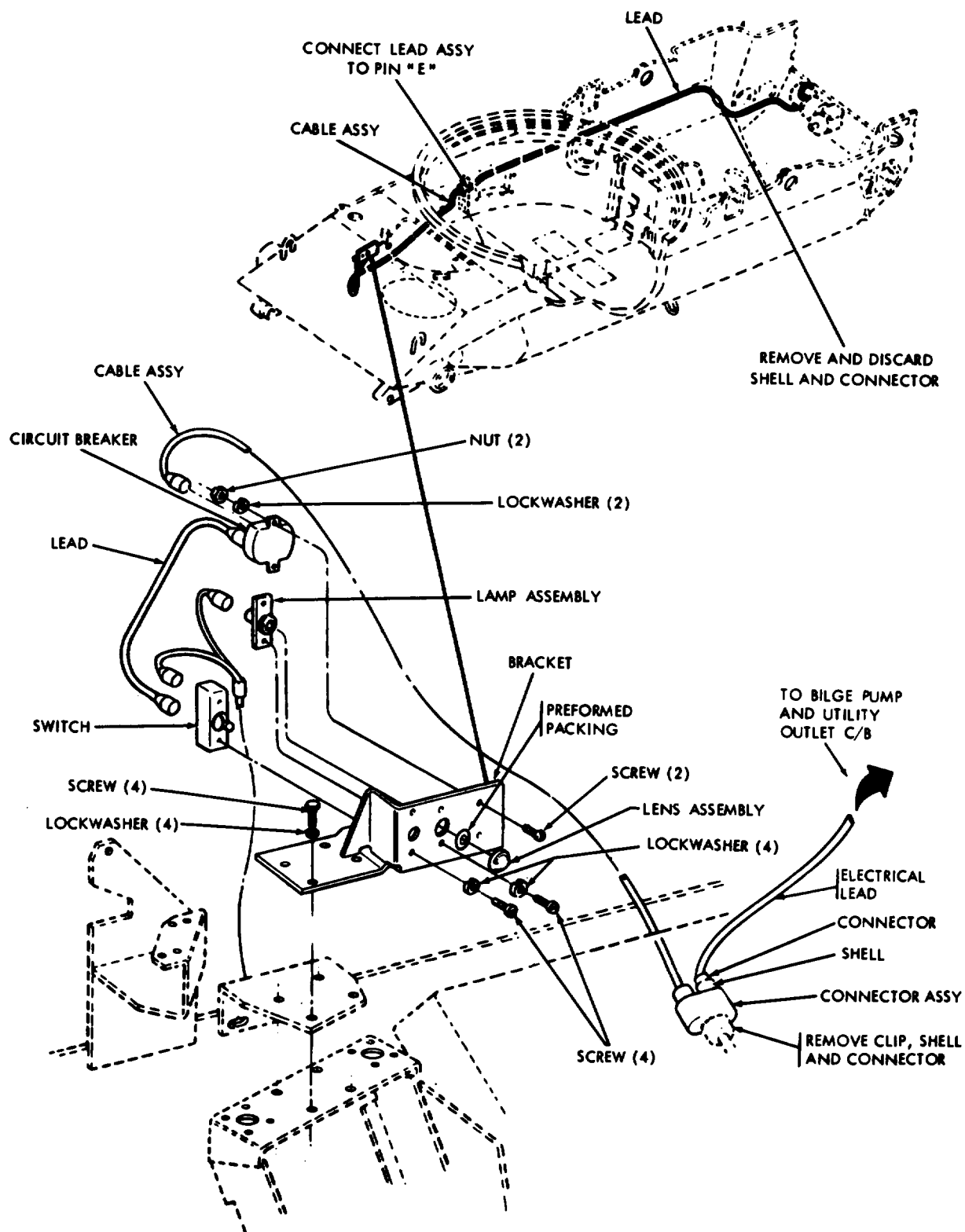
(1) Align lamp assembly on mounting bracket, and secure with two screws and lockwashers.

(2) Install lamp and lens.



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Figure 4-29. Removal or Installation of electrical system components (sheet 1 of 2) (M60 only).



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Figure 4-29. Removal or installation of electrical system components (sheet 2 of 2) (M60A1, M60AI RISE, M60A3 w/o smoke generator).

(3) Connect electrical lead to lamp assembly.

(4) Connect battery cables, and close turret platform access door TM 9-2350215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

(5) Place MASTER BATTERY switch in ON position, and check that HYDRAULIC PUMP lamp illuminates.

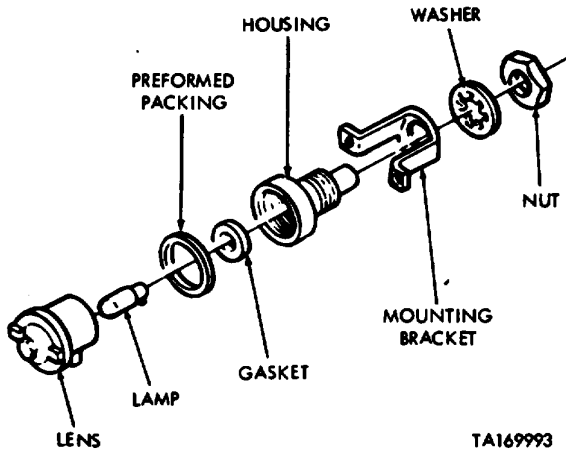


Figure 4-30. Repair of lamp assembly.

4-92. Hydraulic Pump Circuit Breaker.

a. Removal (Fig 4-29).

(1) Place MASTER BATTERY switch in OFF position.

(2) Open turret platform access door, and disconnect battery cables. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350257-20-1 (M60A1 RISE), or TM 9-2350-25320-1 (M60A3).

(3) Disconnect lead assembly connectors from circuit breaker.

(4) Remove two screws, nuts, and lockwashers securing circuit breaker to bracket. Remove circuit breaker from bracket.

b. Installation (Fig 4-29).

(1) Align circuit breaker on mounting bracket, and secure with two screws, nuts, and lockwashers.

(2) Connect electrical connectors to circuit breaker.

(3) Connect battery cables and close turret platform access door. See TM 92350-215-20 (M60, M60A1), TM 9-2350-25720-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

4-93. Hydraulic Pump Control Panel Bracket.

a. Removal (Fig 4-29).

(1) -Remove HYDRAULIC PUMP electrical switch (para 4-90).

(2) Remove HYDRAULIC PUMP indicator lamp assembly (para 4-91).

(3) Remove HYDRAULIC PUMP circuit breaker (para 4-92).

(4) Disconnect wiring harness cable connector from receptacle on rear of gage indicator panel (M60A1, M60A1 RISE and M60A3 only).

(5) Remove four screws and lockwashers securing gage indicator panel support bracket and hydraulic control panel bracket to mounting bracket, and remove gage indicator panel support bracket and hydraulic pump bracket (M60A1, M60A1 RISE and M60A3 only).

(6) Remove two screws, nuts, and four washers securing hydraulic pump control panel bracket to master control panel, and remove bracket (M60 only).

b. Installation (Fig 4-29).

(1) Align hydraulic pump control panel bracket on MASTER CONTROL panel, and secure with two screws, nuts, and four washers (M60 only).

(2) Align gage indicator panel support bracket and hydraulic pump control panel bracket to mounting bracket, and secure with four screws and lockwashers (M60A1, M60A1 RISE, and M60A3 only).

(3) Connect wiring harness cable connector to receptacle on rear of gage indicator panel (M60A1, M60A1 RISE and M60A3 only).

(4) Install hydraulic pump circuit breaker (para 4-92).

(5) Install HYDRAULIC PUMP indicator lamp assembly (para 4-91).

(6) Install HYDRAULIC PUMP electrical switch (para 4-90).

4-94. Wiring Harness.

a. Removal (Fig 4-29).

(1) Place MASTER BATTERY, switch in OFF position.

(2) Open turret platform access door, and disconnect battery cables. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

(3) Disconnect electrical lead assembly connectors from circuit breaker and connector assembly.

(4) Disconnect wiring harness from HYDRAULIC PUMP electrical switch and circuit breaker.

(5) Disconnect lead assembly from HYDRAULIC PUMP electrical switch and indicator lamp assembly.

(6) Remove bolts securing wiring harness clamps and cover.

(7) Remove lead assembly (circuit number 415E) from hull floor.

(8) Remove lead assembly.

(9) Disconnect lead assembly between connector and bulkhead; remove lead assembly.

(10) Disconnect lead assembly between magnetic clutch and connector; remove lead assembly.

b. Repair.

(1) Examine the lead assembly for damaged connector, conductors, or insulation.

(2) Replace defective connector parts (Fig 4-29).

(3) Repair damaged leads by wrapping base conductors with waterproof insulating tape, or install a jumper wire as a substitute. Refer to wiring diagram for proper connections (Fig 4-31).

c. Installation (Fig 4-29).

(1) Connect lead assembly between magnetic clutch and connector.

(2) Connect lead assembly between connector and bulkhead.

(3) Install lead assembly to bulkhead connector.

(4) Install lead assembly (circuit number 415E) to hull floor.

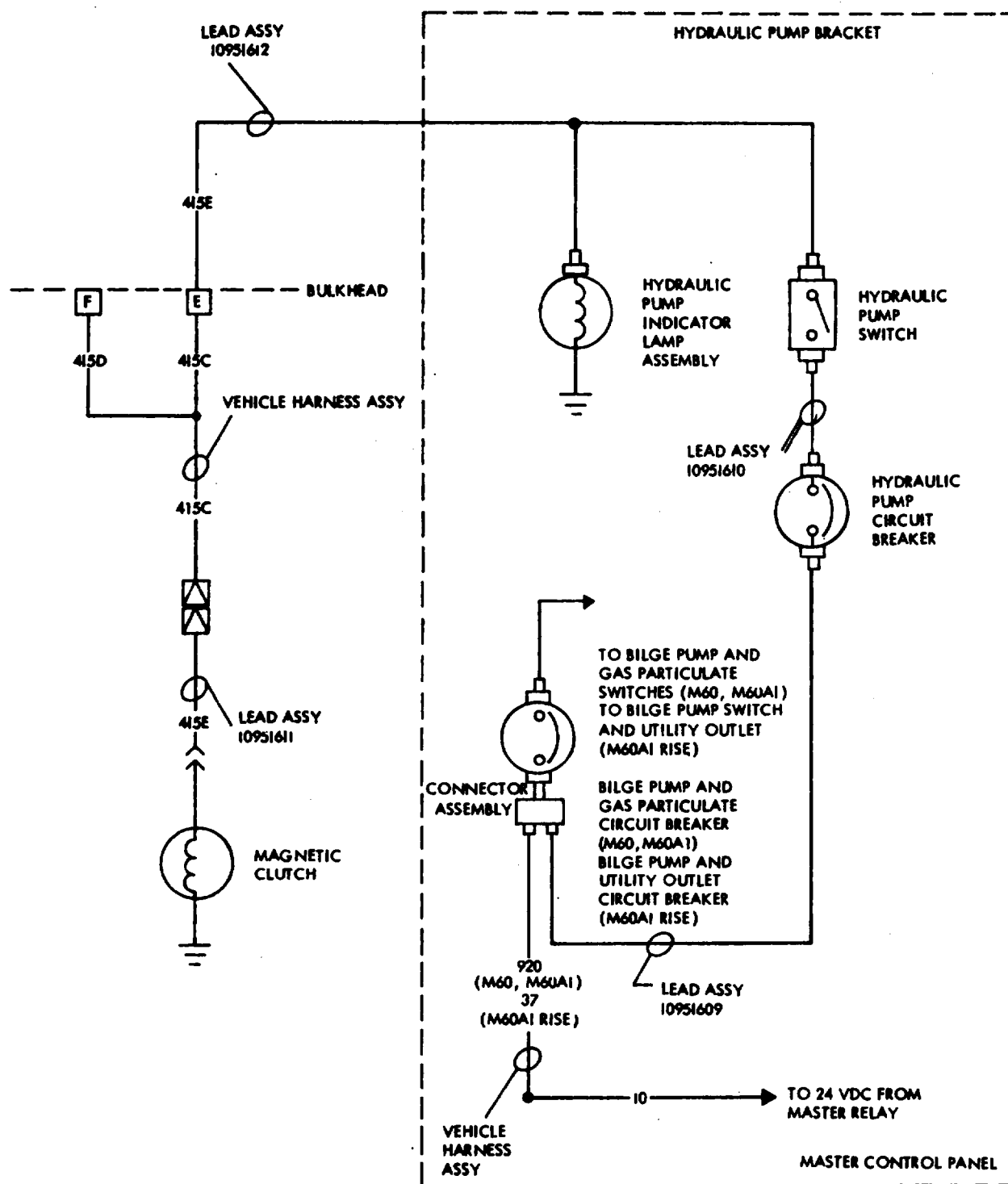
(5) Install wiring harness clamps and cover, and secure with bolts.

(6) Connect wiring harness to HYDRAULIC PUMP electrical switch and indicator lamp assembly.

(7) Install lead assembly between HYDRAULIC PUMP electrical switch and circuit breaker.

(8) Install lead assembly between circuit breaker and connector assembly.

(9) Reconnect battery cables and close turret access doors TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).



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Figure 4-31. Bulldozer electrical circuit - schematic diagram.

Section XXII. MAINTENANCE OF AIR VENT LINE

4-95. Description.. The air vent line is located on the left side of the vehicle. It is attached to the top of the reservoir and to the left air cleaner. There is an air filter element in the vent line which allows air to pass in both directions under normal operating conditions.

WARNING

Do not remove drain plug or disconnect tubes while engine is running.

4-96. Removal (Fig 4-32).

a. Disconnect hydraulic lines carefully to relieve pressure.

b. Disconnect tube assembly from adapter in elbow on top of reservoir cover.

c. Disconnect hose assembly from nipple.

d. Remove nut, peeking, and nipple from filter.

e. Remove two screws, lockwashers, and washers from bracket. Lift off bracket with filter and tube assembly attached.

f. Disconnect tube assembly from nipple.

g. Remove nut, packing, and nipple from filter, and remove bracket.

h. Remove screw, lockwasher, washer, and clamp securing hose assembly to outrigger.

i. Disconnect hose assembly from elbow on side of air cleaner.

l. Remove elbow from air cleaner.

k. Remove four screws, lockwashers, and clamps securing hose assembly to air cleaner, and remove hose assembly.

4-97. Disassembly of Filter (Fig 4-33).

a. Unscrew body of filter from cover.

b. Remove element, spring, and preformed packing.

4-98. Inspection.

a. Inspect all components for cracks or damage.

b. Replace element if necessary.

4-99. Assembly (Fig 4-33).

a. Install preformed packing to body.

b. Install spring and element, and screw body to cover.

4-100. Installation (Fig 4-32).

a. Position hose assembly to side of air cleaner, and secure with four clamps, screws, and lockwashers.

b. Install elbow in side of air cleaner.

c. Connect hose assembly to elbow.

d. Position hose assembly to outrigger, and secure with clamp, screw, lockwasher, and washer.

e. Install filter to bracket, and secure with nipple, packing, and nut.

f. Check that arrow, stamped on filter, is pointing toward rear of vehicle, for correct airflow direction.

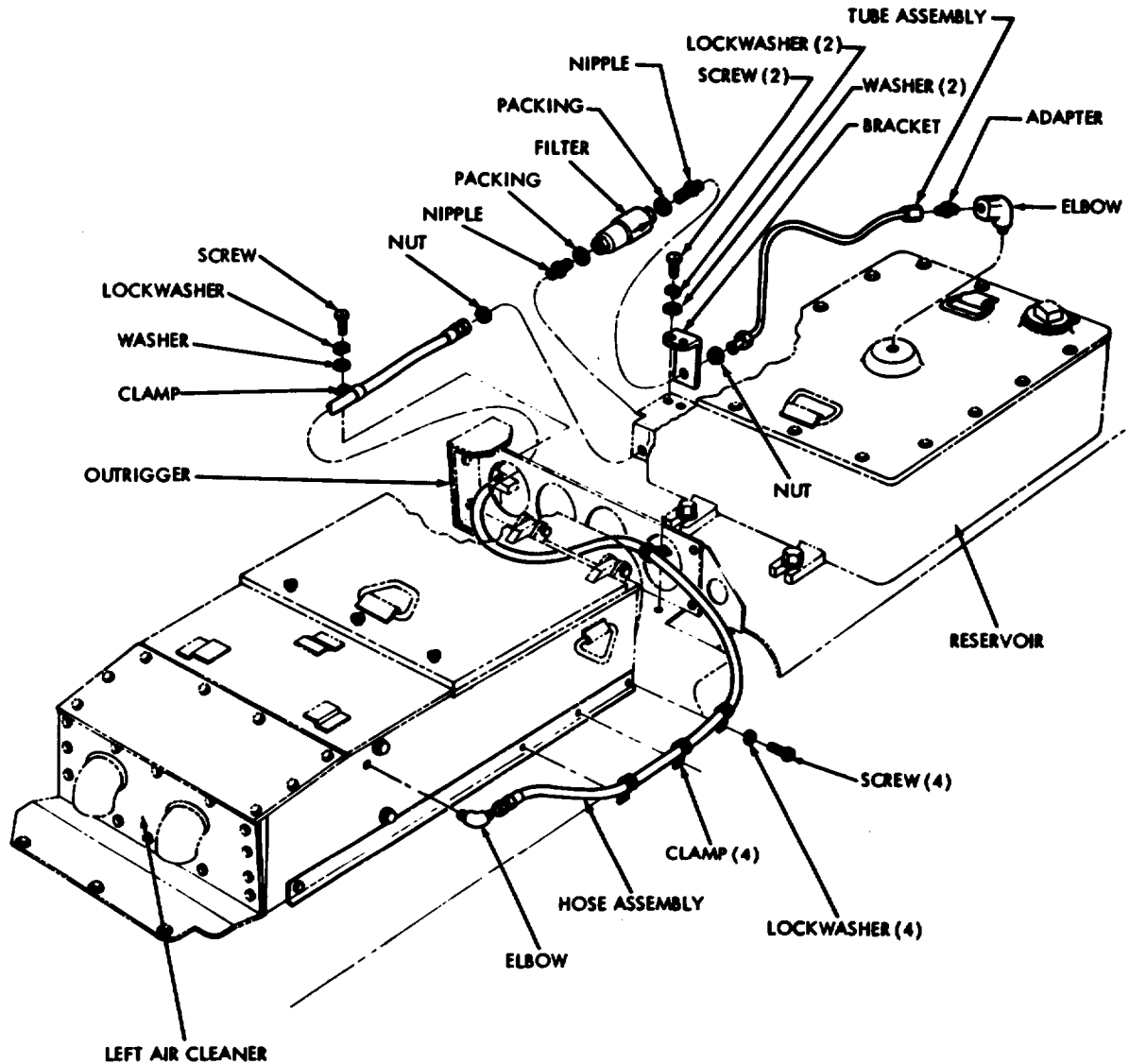
g. Install nipple and packing on filter.

h. Connect tube assembly to nipple at bracket.

i. Position assembled bracket, filter, and tube assembly, and secure with two screws, lockwashers, and washers.

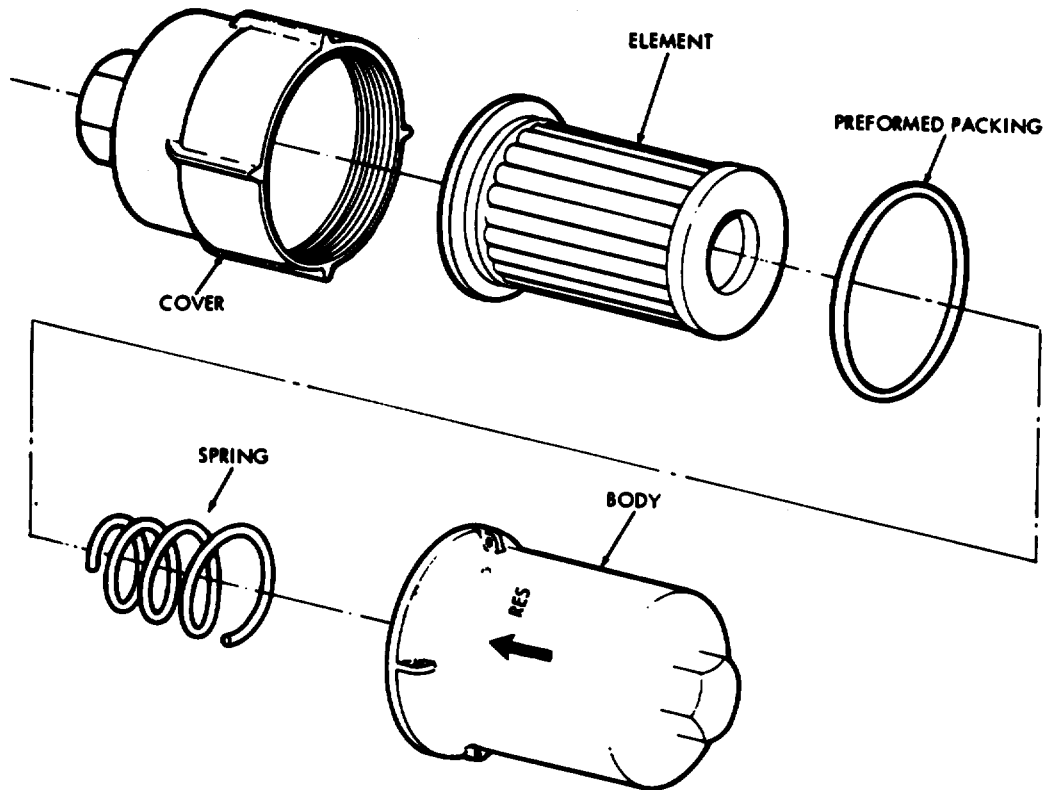
j. Install nut to filter, and connect on elbow in reservoir cover.

k. Connect tube assembly to adapter hose assembly on elbow in reservoir cover.



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Figure 4-32. Removal or nstallation of hydraulic reservoir air vent line filter and attaching parts.



TA169996

Figure 4-33. Disassembly or assembly of hydraulic reservoir air vent line filter.

Section XXIII. TROUBLESHOOTING

4-101. General.

a. This section contains troubleshooting information and tests for locating and correcting troubles that may develop in the vehicle M9 bulldozer systems. The information is arranged to provide a flexible and logical step-by-step method of troubleshooting. Once a malfunction is recognized, the maintenance problem can be solved by use of troubleshooting routines, or by various supporting information.

WARNING

In troubleshooting M9 bulldozer system, remain clear of blade assembly even with system turned off.

b. This manual cannot cover all possible troubles which may occur under many operating conditions. If a particular trouble is not covered, troubleshoot the total system in which the trouble occurs; then locate the defective component. Standard automotive theories and principles of operation apply in troubleshooting the vehicle. Use all senses and methods to observe and to locate troubles. Do not neglect the use of any test instruments such as: multimeter, voltmeters, ammeters, test lamps, hydrometers, and pressure vacuum gages which may be available. To obtain the maximum number of observed symptoms of trouble, question the vehicle crew about the conditions under which the symptoms occurred. The greater

the number of symptoms of troubles that can be evaluated, and the more detailed the knowledge of the conditions under which they occurred, the easier it will be to isolate the defect.

c. The troubleshooting information contained in this section parallels the concept of maintenance and the level of responsibility prescribed in the maintenance allocation chart.

4-102. Troubleshooting Malfunctions. Table 4-2 does not list malfunctions for which corrective action is beyond the scope of organizational maintenance. Notify supporting maintenance personnel for malfunctions not listed.

4-103. Schematic Diagram. Schematic diagrams and locational views (fig 4-31) are provided as supporting aids to the troubleshooting (table 4-2).

Table 4-2. Troubleshooting

MALFUNCTION	TEST OR OPERATION	CORRECTIVE ACTION
1.	BLADE ASSEMBLY FAILS TO MAINTAIN DESIRED HOLD POSITION AND RESPONDS SLUGGISHLY TO CONTROL WHEN BEING RAISED OR LOWERED.	
Step 1.	Raise and lower blade assembly several times to purge system of air, then check oil level.	
a.	If oil level is correct, proceed to step 2.	
b.	If oil level is below ADD mark, refill reservoir to FULL mark on reservoir dipstick (fig 3-1).	
Step 2.	Check if oil reservoir filters are clogged (fig 4-1).	
a.	If filters are clogged, service filters (fig 4-1).	
b.	If filters are not clogged, proceed to step 3.	
Step 3.	Check hydraulic lines and fittings for leaks, punctures, or metal tubing damaged to the point that oil flow is restricted.	
a.	If damaged or leaking, replace punctured flexible hoses and damaged metal tubing or fittings (para 4-29).	
b.	If not damaged or leaking, proceed to step 4.	
Step 4.	Inspect hydraulic cylinder for leaks or damage.	
a.	If leaking or damaged, replace hydraulic cylinder (para 4-33).	
b.	If not leaking or damaged, proceed to step 5.	

Table 4-2. Troubleshooting - Continued

MALFUNCTION	TEST OR OPERATION	CORRECTIVE ACTION
	Step 5.	Inspect control valve for leaks and control valve mechanical linkage for binding or distortion. <ul style="list-style-type: none"> a. If leaking, replace control valve (para 4-53) or if binding, adjust control valve linkage (para 4-87). b. If not leaking or binding, proceed to step 6.
	Step 6.	Perform visual and audio (sound) check of pump to determine that pump bearings, seals, shaft and wear plates are in good condition. Removal of the pump is necessary in order to make a complete check of pump (para 4-77). <ul style="list-style-type: none"> a. If pump is in good condition, proceed to step 7. b. If pump is not in good condition, replace hydraulic pump (para 4-77).
	Step 7.	Check unloader valve for cleanliness. Removal is necessary to check contamination of tube assembly. Check from control valve outlet to unloader valve. <ul style="list-style-type: none"> a. If dirty and contaminated, remove, clean, and replace unloader valve (para 4-48). b. If still not operating properly, replace unloader valve (para 4-48).
2.	POWER TAKEOFF OVERHEATING.	
	Step 1.	Check oil level in power takeoff (fig 4-1). <ul style="list-style-type: none"> a. If oil level is low, add oil to power takeoff. b. If oil level is not low, replace power takeoff (para 4-82).
3.	BLADE ASSEMBLY FAILS TO RAISE HIGH ENOUGH TO ENGAGE CARRYING HOOKS.	
	Step 1.	Inspect linkage at front of vehicle for interference caused by dirt or rocks wedged between members. <ul style="list-style-type: none"> a. If obstructed, clear obstruction and repair if necessary. b. If not obstructed, proceed to step 2.
	Step 2.	Check carrying hooks for looseness on shaft. <ul style="list-style-type: none"> a. If loose, correct position of carrying hooks on shaft and tighten set screws (para 4-55). b. If not loose, notify organizational maintenance.

Table 4-2. Troubleshooting - Continued

MALFUNCTION	TEST OR OPERATION	CORRECTIVE ACTION
4.	BLADE ASSEMBLY FAILS TO DIG PROPERLY.	
	Step 1. Inspect blade assembly cutting edge for looseness and wear.	
	a. If loose, tighten attaching bolts. If worn, reverse or replace cutting edge (para 4-19).	
	b. If not loose or worn, proceed to step 2.	
	Step 2. Check blade assembly for misalignment of pushbeams or tilt arms and damage or looseness of attaching hardware.	
	a. If misaligned, damaged or loose, replace damaged parts and tighten loose components.	
	b. If not misaligned, damaged or loose, notify organizational maintenance.	
5.	BLADE ASSEMBLY FAILS TO OPERATE.	

WARNING

In troubleshooting M9 bulldozer system, remain clear of blade assembly even with system turned off.

- Step 1. Check oil in right-angle drive and magnetic clutch for proper level. Disengage blade assembly carrying hooks. Place MASTER BATTERY switch in ON position and start engine. Place HYDRAULIC PUMP switch in ON position. Run engine at 1500 rpm. Check oil in reservoir for proper level. Check if blade assembly will operate in any control position with engine running at 1500 rpm.
- a. If blade assembly will operate in at least one control position, proceed to step 2.
 - b. If blade assembly will not operate in any position, proceed to step 7.
- Step 2. Place HYDRAULIC PUMP switch in OFF position. Check if blade assembly will operate.
- a. If blade assembly operates, replace HYDRAULIC PUMP switch (para 4-90).
 - b. If blade assembly does not operate, proceed to step 3.

Table 4-2. Troubleshooting - Continued

MALFUNCTION	TEST OR OPERATION	CORRECTIVE ACTION
5.	BLADE ASSEMBLY FAILS TO OPERATE - CONTINUED.	
Step 3.	Place HYDRAULIC PUMP switch in ON position. Check if blade assembly will float when control valve is placed in the float position.	
	a. If blade assembly floats, proceed to step 4.	
	b. If blade assembly does not float, proceed to step 13.	
Step 4.	Place control valve in hold position. Check if blade assembly will hold.	
	a. If blade assembly will hold, proceed to step 5.	
	b. If blade assembly will not hold, proceed to step 13.	
Step 5.	Check if blade assembly will move at a rate of at least 5-1/2 inches per second in either direction when engine is at 1500 rpm.	
	a. If blade assembly moves at 5-1/2 inches per second or more, proceed to step 6.	
	b. If blade assembly moves at less than 5-1/2 inches per second, proceed to step 13.	
Step 6.	Check If blade assembly will raise but not lower.	
	a. If blade assembly will raise but not lower, replace manifold control valve (para 4-53).	
	b. If blade assembly will not raise, replace unloader valve (para 4-48).	
Step 7.	Check all linkages from blade control lever assembly to control valve for proper adjustment (para 4-87). Check control handle shaft and lever arms for free play between shaft and arms.	
	a. If properly adjusted and no free play, proceed to step 8.	
	b. If not properly adjusted or free play between shaft and arms, repair or adjust (para 4-87).	
Step 8.	Check blade assembly for obstacles that are preventing blade assembly response.	
	a. If obstacles are present, shut off engine and remove obstacles.	
	b. If no obstacles, proceed to step 9.	

Table 4-2. Troubleshooting - Continued

MALFUNCTION	TEST OR OPERATION	CORRECTIVE ACTION
5.	BLADE ASSEMBLY FAILS TO OPERATE - CONTINUED.	
Step 9.	Shut off engine. Insure MASTER BATTERY switch is ON. Place HYDRAULIC PUMP switch in ON position and check illumination of pump indicator light.	
a.	If indicator illuminates bright and steady, proceed to step 10.	
b.	If indicator does not illuminate bright and steady, proceed to step 16.	
Step 10.	Open engine exhaust doors and remove transmission shroud. Disconnect lead assembly 10951611 from magnetic clutch. Check lead 10951611 connector for 24 vde.	
a.	If 24 vde is present, proceed to step 11.	
b.	If 24 vdc is not present, proceed to step 23.	
Step 11.	Check resistance between magnetic clutch connector and ground.	
a.	If resistance is between 8 and 12 ohms, proceed to step 12.	
b.	If resistance is more than 12 ohms or less than 8 ohms, replace magnetic clutch (para 4-67).	
Step 12.	Check oil level in reservoir.	
a.	If oil level is low, check system for oil leaks or damaged lines and repair or replace (para 4-29).	
b.	If oil level is not low, replace right-angle drive or hydraulic pump.	
Step 13.	Check for leakage or damaged lines.	
a.	If leaking or damaged, repair lines (para 4-30).	
b.	If not leaking or damaged, replace manifold control valve (para 4-53).	
Step 14.	Check oil level in reservoir.	
a.	If oil level is low, check system for leaks or damaged lines and repair or replace.	
b.	If oil level is not low, proceed to step 15.	

Table 4-2. Troubleshooting - Continued

MALFUNCTION	TEST OR OPERATION	CORRECTIVE ACTION
5.	BLADE ASSEMBLY FAILS TO OPERATE - CONTINUED.	
	Step 15. Check filter screens in oil reservoir (fig 4-1).	
	a. If filter screens are clogged, clean screens (fig 4-1).	
	b. If filter screens are not clogged, replace hydraulic pump (para 4-76).	
	Step 16. Replace indicator lamp. Check operation of indicator.	
	a. If indicator now illuminates properly, discard defective lamp.	
	b. If indicator does not illuminate properly, proceed to step 17.	
	Step 17. Remove lamp from hydraulic pump indicator. Disconnect lead assembly 10951612 connector from HYDRAULIC PUMP switch. Check resistance to ground at lead assembly 10951612 switch connector.	
	a. If resistance is less than 8 ohms, proceed to step 18.	
	b. If resistance is more than 8 ohms, proceed to step 24. v	
	Step 18. Disconnect lead assembly 10951611 from magnetic clutch. Check resistance to ground at lead assembly 10951612 switch connector.	
	a. If resistance is infinite, replace magnetic clutch (para 4-67).	
	b. If resistance is less than 8 ohms, proceed to step 19.	
	Step 19. Disconnect lead assembly 10951612 from hydraulic pump indicator. Check resistance to ground at lead assembly 10951612 switch connector.	
	a. If resistance is infinite, replace lamp assembly (para 4-90).	
	b. If resistance is less than 8 ohms, proceed to step 20.	
	Step 20. Disconnect lead assembly 10951611 from vehicle harness assembly. Check resistance to ground at lead assembly 10951612 switch connector.	
	a. If resistance is infinite, repair or replace lead assembly 10951611 (para 4-94).	
	b. If resistance is less than 8 ohms, proceed to step 21.	

Table 4-2. Troubleshooting - Continued

MALFUNCTION	TEST OR OPERATION	CORRECTIVE ACTION
5.	BLADE ASSEMBLY FAILS TO OPERATE - CONTINUED.	
	Step 21. Disconnect lead assembly 10951612 from vehicle harness assembly at bulk-head. Check resistance to ground at lead assembly 10951612 switch connector.	
	a. If resistance is infinite, repair or replace vehicle harness assembly (para 4-94).	
	b. If resistance is less than 8 ohms, repair or replace lead assembly 10951612 (para 4-94).	
	Step 22. Disconnect lead assembly 10951611 from vehicle harness assembly. Check vehicle harness assembly connector for 24 vdc between connector and ground.	
	a. If 24 vdc is present, proceed to step 23.	
	b. If 24 vde is not present, repair or replace lead assembly 11951611.	
	Step 23. Disconnect lead assembly 10951612 from vehicle harness assembly at bulk- head. Check for 24 vdc at pin E of bulkhead connector to ground.	
	a. If 24 vdc is present, repair or replace vehicle harness assembly (para 4-94).	
	b. If 24 vdc is not present, repair or replace lead assembly 10951612 (para 4-94).	
	Step 24. Disconnect lead assembly 10951612 from HYDRAULIC PUMP switch. Check HYDRAULIC PUMP switch for 24 vdc between switch connector and ground.	
	a. If 24 vdc is present, repair or replace lead assembly 10951612 (para 4-94).	
	b. If 24 vdc is not present, proceed to step 25.	
	Step 25. Disconnect lead assembly 10951610 from HYDRAULIC PUMP switch.	
	a. If 24 vdc is present, replace HYDRAULIC PUMP switch (para 4-90).	
	b. If 24 vdc is not present, proceed to step 26.	
	Step 26. Disconnect lead assembly 10951610 from hydraulic pump circuit breaker. Check connector on circuit breaker for 24 vde to ground.	
	a. If 24 vdc is present, repair or replace lead assembly 10951610 (para 4-94).	
	b. If 24 vde is not present, proceed to step 27.	

Table 4-2. Troubleshooting - Continued

MALFUNCTION	TEST OR OPERATION	CORRECTIVE ACTION
5. BLADE ASSEMBLY FAILS TO OPERATE - CONTINUED.		
Step 27. Disconnect lead assembly 10951609 circuit breaker connector for 24 vde to .ground.		
	a. If 24 vdc is present, replace hydraulic pump circuit breaker (para 4-92).	
	b. If 24 yde is not present, proceed to step 28.	
Step 28. Disconnect lead assembly 10951609 from connector assembly. Check con- nector assembly for 24 vdc to ground.		
	a. If 24 vde is present, repair or replace lead assembly 10951609 (para 4-94).	
	b. If 24 vdc is not present, proceed to step 29.	
Step 29. Check if gas particulate blower operates for M60 and M60A1 vehicles. Check for 24 vdc at utility outlet on vehicle master control panel for M60A1 RISE and M60A3. Refer to TM 9-2350-215-20, TM 9-2350-257-20-1, or TM 9-2350-253-20-1.		
	a. If gas particulate blower operates or 24 vdc is present, replace connector assembly.	
	b. If gas particulate blower does not operate or 24 vdc is not present, proceed to step 30.	
Step 30. Disconnect vehicle master control panel harness circuit 920 for M60 and M60A1 or circuit 37 for M60A1 RISE and M60A3 from connector assembly. Check vehicle master control panel harness connector for 24 vde.		
	a. If 24 vde is present, replace connector assembly.	
	b. If 24 vde is not present, refer to TM 9-2350-215-20, TM 9-2350-257-20-1, or TM 9-2350-253-20-1 troubleshooting if gas particulate blower does not operate for M60 and M60A1 vehicles or power not available at utility outlet for M60A1 RISE and M60A3.	

CHAPTER 5

DIRECT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF MATERIEL

5-1. General. When new, used, or reconditioned materiel is first received by direct or general support personnel, it is the responsibility of the officer in charge to determine whether the equipment has been prepared properly for service by the supplying organization, and to insure it is in condition to perform its intended function.

5-2. Inspection. Upon arrival of a new or reconditioned M9 bulldozer, the direct or general support maintenance mechanics will inspect all assemblies, subassemblies, and accessories to insure that they are assembled properly, secured, clean, adjusted correctly, and lubricated. Check all tools and equipment to insure that all items are present, in good condition, and mounted properly or stowed.

5-3. Preparation. If a bulldozer kit is to be installed, proceed as follows:

- a. Remove bulldozer parts from kit.
- b. Inventory bulldozer parts (refer to appendix B).
- c. Notify the officer in charge if there are missing parts.
- d. Refer to Chapter 8 for rework of vehicle components for kit installation, and Chapter 9 for installation of bulldozer kit.

Section II. GENERAL MAINTENANCE

5-4. General This section contains general cleaning, inspection, and repair instructions. Instructions for a specific component are covered in the appropriate chapter.

5-5. Cleaning.*a. Mechanical Parts.*

(1) Remove dirt and other foreign matter from all metal surfaces. This can be done by the dip-tank method or vapordegreaser method, or by cleaning with cloth soaked in drycleaning solvent (PD-680). In the dip-tank method, agitation for approximately 1 minute in each tank is sufficient. In the vapor degreaser method, treatment for about 2 or 3 minutes is sufficient.

(2) Remove foreign matter from recessed areas with a stiff bristled brush and/or scraper.

b. Bearings. Remove dirt, oil, or grease from bearings that can be cleaned using either dip-tank or vapor-degreaser method. Dip and agitate bearings in clean drycleaning solvent (PD-680). Dry thoroughly and coat with thin film of lubricant. Wrap tightly in oiled paper until ready for assembly.

5-6. Inspection and Repair of Cast Parts and Machined Surfaces.

a. Inspect cast parts for cracks or fractures. Inspect interiors for scores and burrs.

b. Inspect machined surfaces for cracks, fractures, galling, pitting, scoring, or corrosion.

c. Remove minor scores and burrs from machined surfaces and interior of cast parts with a fine stone or crocus cloth that has been dipped in drycleaning solvent (PD680). Replace part if it is cracked,

fractured, or excessively scored, worn, or burred.

5-7. Inspection and Repair of Shafts and Splines.

a. Inspect shafts for cracks, fractures, scores, and deformation. Remove minor nicks with a fine stone or crocus cloth. Replace shafts if they are cracked, fractured, scored, or deformed.

b. Inspect splines for cracks, fractures, and deformation. Remove minor nicks with a fine stone or crocus cloth. Replace any splined parts if splines do not permit proper fit or are cracked or fractured.

5-8. Inspection and Repair of Threaded Parts.

a. Inspect all threaded parts for worn or damaged threads.

b. Repair damaged threads by chasing with a tap or die.

5-9. Inspection of Snaprings. Replace snaprings if damaged in any way.

5-10. Inspection and Removal of Dowel Pins.

a. Inspect dowel pins for wear and proper fit. Replace if defective.

b. If necessary to remove dowel pins, use one of the following methods:

(1) Grip pin with self-locking pliers and pull with a twisting motion.

(2) Grind pin off flush with surface and drill out remainder of pin.

5-11. Removal of Studs. If necessary to remove studs, use one of the following methods:

a. Use stud remover.

b. Apply penetrating oil (VV-P-216) to base of stud. Thread two hex nuts on stud and jam nuts. Sharply tap head of stud several times with a hammer. Turn lower nut to remove stud.

c. Apply penetrating oil (VV-P-216) to base of stud and sharply tap head of stud several times with a hammer. Unscrew stud with self-locking pliers.

d. Grind stud off flush with surface and drill out remainder of stud.

5-12. Inspection and Repair of Welds.

a. Inspect all welds for cracks or defects.

b. Repair welds in accordance with TM 9-237.

5-13. Inspection, Care, and Maintenance of Antifriction Bearings. Refer to TM 9-214 for procedures.

5-14. Inspection of Bushing type bearings. Inspect bushing type bearings, before removal, for cracks, fractures, galling, pitting, scoring, or corrosion. Replace bearings if they are damaged in any way.

5-15. Inspection and Repair of Gears.

a. Inspect gears for wear, nicks, flaking, scoring, and burring. Check that gears are mounted securely.

b. Remove minor nicks with a fine stone or crocus cloth. Replace gears if damaged in any way.

CHAPTER 6

REPAIR INSTRUCTIONS

Section I. REPLACEMENT OF EMERGENCY LIFTING CABLE

6-1. Description. Two emergency lifting cables are attached to the moldboard of the blade assembly by stowage clamps. Stowage clamps secure each cable length to the moldboard.

6-2. Cable Stowage Clamp Assembly.

a. Removal (Fig 6-1).

- (1) Lower blade assembly to ground.
- (2) Stop vehicle engine and apply parking brake.
- (3) Loosen locknut and remove eyebolt, nut, lockwasher, and clamp.

b. Installation (Fig 6-1).

- (1) Position loop of cable over.
- (2) Place clamp over cable.
- (3) Tighten eyebolt and locknut.

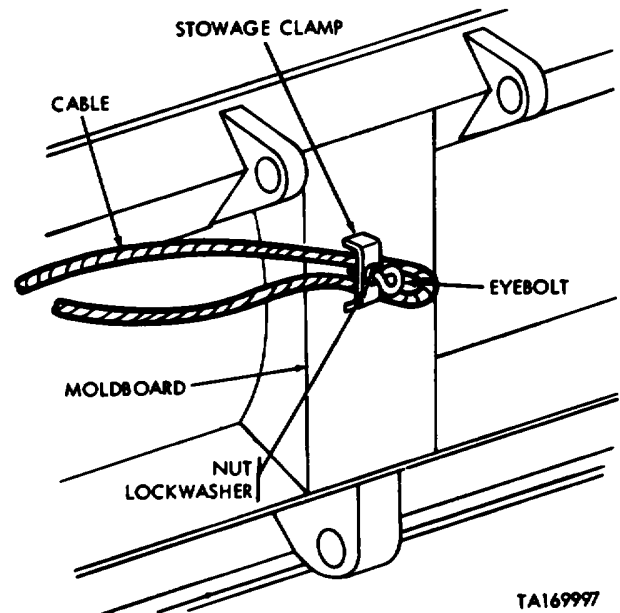


Figure 6-1. Removal or installation of eyebolt hole cable stowage clamp

6-3. Emergency Lifting Cable.

a. Removal (Fig 6-2).

- (1) Lower blade assembly to ground.
- (2) Stop vehicle engine and apply parking brake.
- (3) Remove four clamps from cable.
- (4) Remove cable and tube from moldboard.

b. Installation (Fig 8-2).

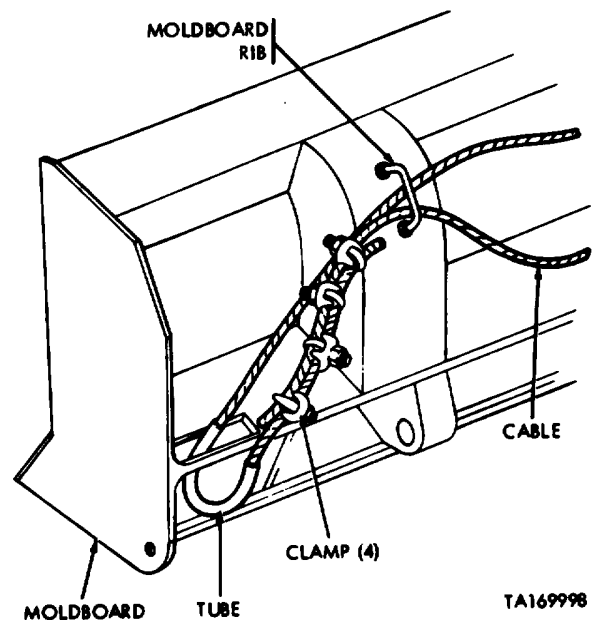


Figure 6-2. Removal or installation of emergency lifting cable.

(1) Insert cable through moldboard rib. Position tube through hole in moldboard, and overlap cable end 14-1/2 inches.

(2) Position clamps approximately 2-inches from ends of overlap, and space as shown.

Section II. REPAIR OF MAGNETIC CLUTCH

6-4. Description. Refer to paragraph 4-66.

6-5. Removal Refer to paragraph 4-67.

6-6. Disassembly (Fig 6-3).

a. Using spanner wrench (item 1, table 1-1), remove ring (1).

b. Remove snapring (2) from shaft (4).

c. Using bearing puller, remove bearing (3) from shaft (4).

d. Remove snapring (7) from shaft (4).

e. Using bearing puller, remove bearing (6) from shaft (4).

f. Using bearing puller, remove clutch (8) from shaft (4).

g. Remove and discard key (5).

h. Remove lockwire (13), four screws (12), and lockwashers (11), securing connector (10), and gasket (9), to clutch (8).

i. Remove connector (10), and gasket (9) from clutch (8) and discard gasket (9).

6-7. Cleaning. Refer to paragraph 5-5 for cleaning instructions.

6-8. Inspection. Check component parts for wear limits as specified in table 6-1.

6-9. Assembly (Fig 6-3).

a. Position connector (10), and new gasket (9), on clutch (8).

b. Install connector (10) and gasket (9) to clutch (8) and secure with four screws (12), lockwashers (11), and lockwire (13).

c. Install new key (5) in shaft (4).

d. Slide clutch (8) on shaft (4).

e. Press bearing (6) on shaft (4) until it clears retaining ring groove.

f. Install snapring (7).

g. Press bearing (3) into clutch (8).

h. Using spanner wrench (item 1, table 1-1), install ring (1).

i. Press assembled bearing (3) and clutch (8) on shaft (4) until they clear retaining ring groove.

j. Remove ring (1) from clutch (8).

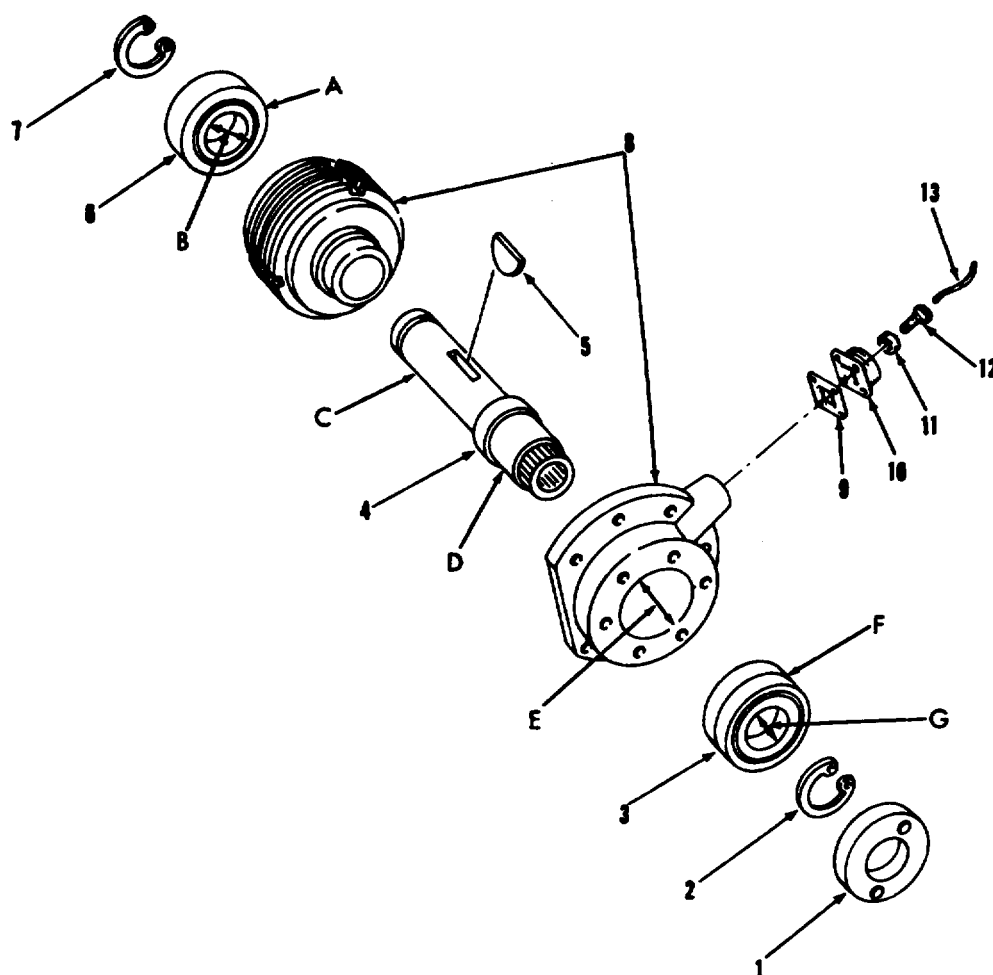
k. Install snapring (2) on shaft (4).

l. Using spanner wrench, install ring (1).

6-10. Adjustment (Fig 6-4).

a. Connect positive lead of a 28 vdc power supply to pin in connector, and ground lead to rim of magnet body half.

b. Turn power on and adjust for 26.530 vdc.



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- | | | | |
|---|----------|----|----------------|
| 1 | Ring | 8 | Clutch |
| 2 | Snapring | 9 | Gasket |
| 3 | Bearing | 10 | Connector |
| 4 | Shaft | 11 | Lockwasher (4) |
| 5 | Key | 12 | Screw (4) |
| 6 | Bearing | 13 | Lockwire (2) |
| 7 | Snapring | | |

Figure 6-3. Disassembly or assembly of magnetic clutch.

Table 6-1. Repair Standard for Magnetic Clutch

Figure Number	Reference Letter	Point of Measurements	Wear Limits
6-3	A	Bearing OD	2.4404 to 2.4409
6-3	B	Bearing ID	1.1807 to 1.1811
6-3	C	Shaft OD	1.1812 to 1.1806
6-3	D	Shaft OD	1.3781 to 1.3785
6-3	E	Magnet Body Half ID	2.4409 to 2.4416
6-3	F	Bearing OD	2.4404 to 2.4409
6-3	G	Bearing ID	1.3775 to 1.3780

c. With the magnetic clutch actuated, use a feeler gage to check air gap between magnet body half and clutch body half at 90degree intervals around clutch. The average of four feeler gage readings should be 0.0150.018 inch. If this average is obtained, the clutch is adjusted properly. If not, proceed to step d.

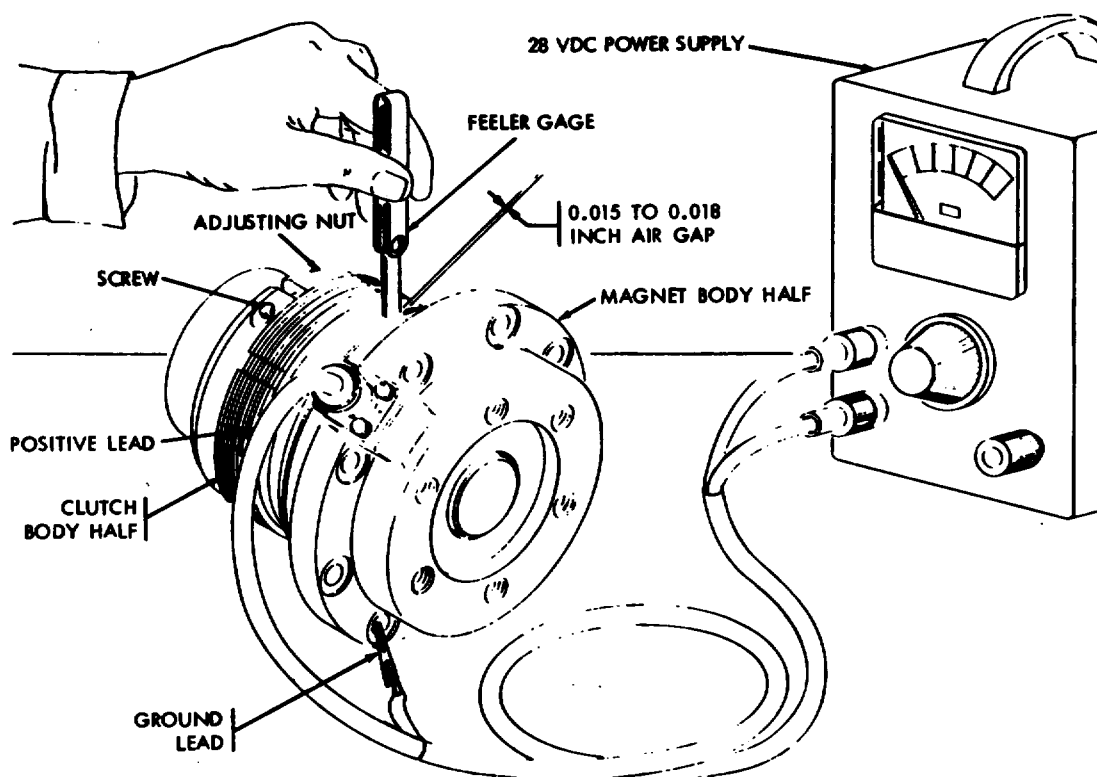
d. Loosen screw in adjusting nut and turn adjusting nut clockwise to increase air gap, or counterclockwise to decrease air gap.

Five degrees of nut travel will change air gap approximately 0.001 inch.

e. Adjust air gap until four feeler gage readings average 0.015-0.018 inch with clutch actuated. Tighten screw.

f. Turn off power, and disconnect power supply from magnetic clutch.

6-11. Installation. Refer to paragraph 4-70.



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Figure 6-4. Adjustment of magnetic clutch.

Figure 6-4. Adjustment of magnetic clutch.

Section III. REPAIR OF HYDRAULIC PUMP ASSEMBLY

6-12. Description. Refer to paragraph 4-76.

6-13. Removal. Refer to paragraph 4-77.

6-14. Disassembly (Fig 6-5).

a. To insure correct reassembly, use a center punch and mark both sides of the pump housing and the two covers so that they can be assembled in the original position.

b. Turn hydraulic pump assembly end cover (15) down.

c. Remove four screws (10) and nuts (16) which attach covers (11 and 15) to pump housing (12).

d. Remove front cover (11) and preformed packing (5).

e. Brush wear plate (6) with blue layout dye (MIL-LI83795) (15, appendix F) to insure proper assembly. Remove two bearings (4), wear plate (6), and gasket (9).

f. Brush tops of two gears (8 and 13) with blue layout dye to insure proper assembly.

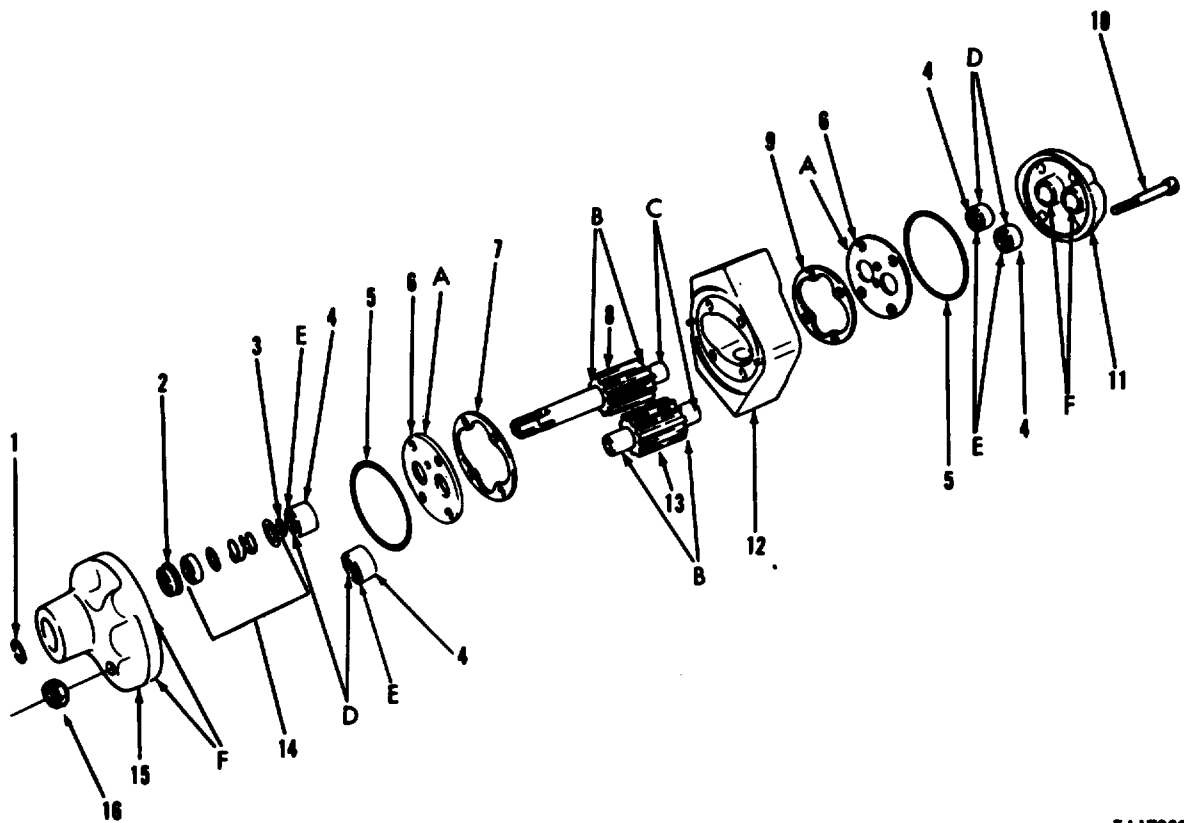
- g. Remove gear (13).
- h. Lift hydraulic pump housing (12) off end cover (15).
- i. Brush wear plate (6) remaining on top of end cover (15) with blue layout dye to insure proper assembly.
- l. Invert end cover (15). Using snapping pliers, remove snapping (1) from outer end of gear (8).

k. Tap shaft of gear (8) with a rawhide mallet, and remove gear (8) and gasket (7).

l. Remove two bearings (4), wear plate (6), preformed packing (5), snapping (3), and two seals (2 and 14).

6-15. Cleaning. Refer to paragraph 5-5 for cleaning instructions.

6-16. Inspection. Check the component parts for wear limits as specified in table 62.



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1	Snapping	5	Preformed packing (2)	9	Gasket	13	Gear
2	Seal	6	Wear plate (2)	10	Screw (4)	14	Seal
3	Snapping	7	Gasket	11	Front cover	15	End cover
4	Bearing (4)	8	Gear	12	Pump housing	16	Nut (4)

Figure 6-5. Disassembly or assembly of hydraulic pump assembly.

Table 6-2. Repair Standards for Hydraulic Pump Assembly

Figure Number	Reference Letter	Points of Measurements	Size and Pit of New Parts	Wear Limits
6-5	A	Thickness of wear plate	0.248 to 0.250	0.246
6-5	B	Width of gears	2.5000 to 2.5005	2.499
6-5	C	OD of gear shaft	0.9990 to 0.9995	0.9980
6-5	D	OD of bearing	1.6870 to 1.6875	(e)
6-5	E	ID of bearings	1.0000 to 1.0005	(e)
6-5	C-E	Fit of shaft in bearing	0.0005L to 0.00015L	(e)
6-5	D-F	Fit of bearing in recess	0.000 to 0.001T	(e)

NOTE: An asterisk (*) indicates a replacement part only.

6-7. Assembly (Fig 6-5).

a. During assembly, replace with new preformed packing, seals, and all worn or damaged parts.

b. There are four bearings to be installed. All except the drive gear bearing (4) in the end cover (15) are installed in the same manner.

c. Place one bearing (4) at top of each bore, and align carefully with bore.

d. Press bearing into bore until firmly seated.

e. Install wear plate (6), removed from end cover (15) on drive gear shaft.

NOTE

Wear plate can be identified and properly installed by noting dye marks made during disassembly.

f. Install remaining bearing (4) on gear shaft.

g. Install snapping (3) securing bearing on gearshaft.

h. Install seal (14) and oil seal (2) on gearshaft with tipad surface of seal facing up.

i. Turn end cover (15) with small opening down, and install gearshaft (8) into its bore in end cover, and secure with snapping (1).

j. Position gear (13) so that it will mate with gearshaft (8) in accordance with dye marks made during disassembly, and insert gear into its bore in end cover.

k. Place preformed packing (5) on machined surface of end cover (15).

l. Lower housing (12) into end cover, position it in accordance with punch marks made during disassembly. Locate housing over the dowel pins in cover and seat firmly.

NOTE

The drive gearshaft will stand up approximately one-quarter of an inch above driven gearshaft due to oil seal spring. When spring is compressed during installation of opposite end cover, gap will be eliminated.

m. Hold a straight edge diametrically across top of housing (12) so that it touches housing at each side of gear (13) and at the same time presses over driven gear. Measure clearance between straight-edge and driven gear with a feeler gage. This clearance should be 0.000 to 0.002 inch.

n. Add or remove gaskets as required to obtain this clearance.

o. Place wear plate (6) (face down) on housing (12). Align it in accordance with dye marks made during disassembly.

p. Place preformed packing (5) on machined surface of front cover (11). Install four screws (10) and nuts (16), and tighten screws to 90 110 lb ft (122 -149 N.m).

q. Rotate gear shaft. If it cannot be rotated readily by hand, remove front cover (11) and install another gasket (9) between cover and housing. Repeat until driven gear shaft can be freely rotated by hand.

6-18. Installation. Refer to paragraph 4-80.

Section IV. REPAIR OF POWER TAKEOFF RIGHT-ANGLE DRIVE

6-19. Description. Refer to paragraph 4-71.

6-20. Removal -Refer to paragraph 4-72.

6-21. Disassembly (Fig 6-6).

a. Remove drain plug (18) and plug (16) from housing (8), and drain lubricating oil from housing.

b. Remove fitting (12), plug (13), and gasket (14) from plate (15).

c. Remove six screws (11) and lockwashers (10) securing plate (15) to housing (8). Remove plate (15) and discard gasket (9).

d. Remove two screws (27) and lockwashers (26) securing lockring (25) to retainer (23) and remove lockring (25).

e. Using spanner wrench (item 2, table 1-1), remove retainer (23) with attaching parts from housing (8).

f. Remove preformed packing (24) from retainer (23) and discard.

g. Remove snapping (20) from gearshaft (19).

h. Remove retainer (23) from bearing (21).

i. Remove seal (28) from retainer (23).

j. Remove snapping (22).

k. Remove bearing (21) from gearshaft (19).

NOTE

Do not remove bearing (17) from housing unless inside diameter is beyond wear limits (table 6-3).

l. Remove bearing (17) from housing (8).

m. Remove retainer assembly (3) with attaching parts from housing (8).

n. Remove snapping (1) from gearshaft (6).

o. Remove retainer assembly (3) and bearing (4) from gearshaft (6).

p. Remove snapring (5) from retainer assembly (3).

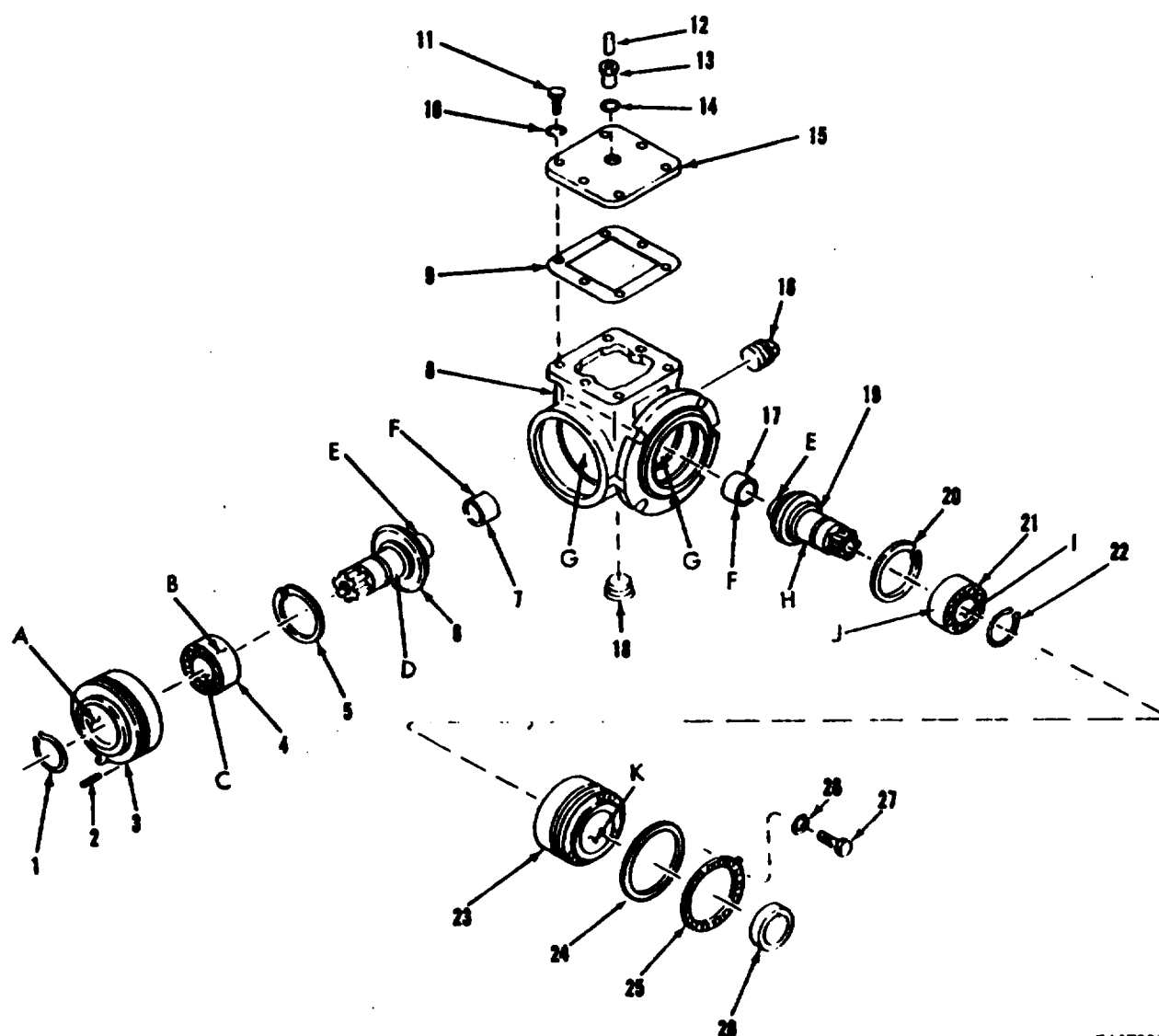
q. Remove bearing (4) from retainer assembly (3).

r. Remove pin (2) from retainer assembly (3).

CAUTION

Do not remove bearing (7) from housing unless inside diameter is beyond wear limits (table 6-3).

a. Remove bearing (7) from housing (8).



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Figure 6-6. Disassembly or assembly of power takeoff right-angle drive.

Legend for figure 6-6:

1	Snapring	8	Housing	15	Plate	22	Snapring
2	Pin	9	Gasket	16	Plug	23	Retainer
3	Retainer assembly	10	Lockwasher (6)	17	Bearing	24	Preformed packing
4	Bearing	11	Screw (6)	18	Drain plug	25	Lockring
5	Snapring	12	Fitting	19	Gearshaft	26	Lockwasher (2)
6	Gearshaft	13	Plug	20	Snapring	27	Screw (2)
7	Bearing	14	Gasket	21	Bearing	28	Seal

Table 6-3. Repair Standards for Power Takeoff Right-Angle Drive

Figure Reference Number	Ref-Point of Letter	Measurements	Wear Limits
6-6	A	Retainer bore ID	3.1495 to 3.1501
6-6	B	Bearing OD	3.1491 to 3.1496
6-6	C	Bearing ID	1.5738 to 1.5748
6-6	D	Gearshaft OD	1.5747 to 1.5752
6-6	E	Gearshaft OD	0.7495 to 0.7500
6-6	F	Bearings OD	1.0010 to 1.0015
6-6	G	Housing ID for bearings	0.9995 to 1.0005
6-6	H	Gearshaft OD	1.3779 to 1.3784
6-6	I	Bearing ID	1.3775 to 1.3780
6-6	J	Bearing OD	2.8341 to 2.8346
6-6	K	Retainer bore ID	2.8346 to 2.8352

6-22. Cleaning. Refer to paragraph 5-5 for cleaning instructions.

6-24. Assembly (Fig 6-6).

6-23. Inspection. Check the component parts for wear limits as specified in table 6-3.

NOTE

Refer to paragraph 6-25 below for adjustment procedure prior to assembly.

- a. During assembly, replace with new preformed packing, seals, and all worn or damaged parts.
- b. Insert bearing (21) into retainer (23) and secure with snapping (20).
- c. Install preformed packing (24) in recess of retainer (23).

NOTE

Gears (6 and 19) are a matched pair; replace as a set.

- d. Insert gearshaft (19) into bearing (21) and secure with snapping (22).
- e. Insert seal (28) on gearshaft (19).
- f. Press bearing (17) into housing (8). Using spanner wrench (item 2, table 1-1), screw threaded retainer (23) into bore of housing (8).
- g. Position lockring (25) on retainer (23), and secure with two lockwashers and screws (26 and 27).
- h. Press bearing (4) into retainer assembly (3) and secure with snapping (5).
- i. Slide gearshaft (6) into bore of bearing (4), and secure with snapping (1).

j. Press bearing (7) into housing (8). Screw threaded retainer assembly (3) into bore of housing (8). Match gear teeth, mating as etched on teeth.

k. Install drain plug (18) and plug (16) in housing (8).

l. Position gasket (9) and plate (15) on housing (8), and secure with six lockwashers and screws (10 and 11).

NOTE

Refer to lubrication guide paragraph 4-3 for lubrication of power takeoff right-angle drive.

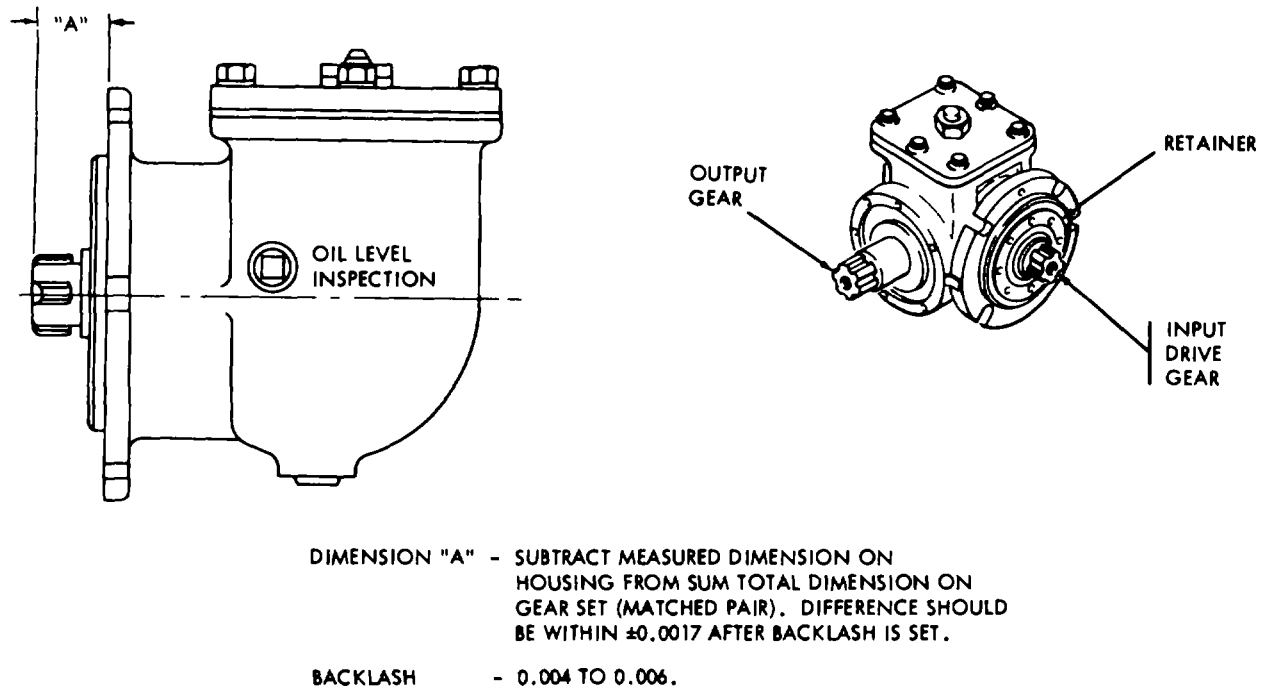
6-25. Adjustment (Fig 6-7).

a. Lock the output drive shaft and rotate the input drive shaft, and check for backlash. Tighten or loosen the input drive shaft retainer until backlash specification is obtained.

b. Check measurement of dimension "A". Maximum deviation from dimension "A" shall not exceed +0.0017 inch.

c. Repeat procedures a and b as required, until dimension "A" and backlash specifications are obtained.

6-26. Installation. Refer to paragraph 4-75.



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Figure 6-7. Adjustment dimensions for power takeoff right-angle drive.

Section V. REPAIR OF BLADE ASSEMBLY CLYLINDER AND RAM

6-27. Description. Refer to paragraph 4-32.

6-28. Removal. Refer to paragraph 4-33.

6-29. Disassembly (Fig 6-8).

a. Remove eight screws and lockwashers (13 and 12) from head (11).

b. Slide cylinder (1) from piston assembly.

c. Remove preformed packing (10) from groove in cylinder (1).

d. Remove cotter pin (2) from nut (3), and remove nut (3) from rod (18).

e. Remove washer (4) and piston (6) from rod (18).

f. Separate preformed packing (5) from piston (6).

g. Remove packing assembly (7) from piston (8).

h. Slide piston (8) from rod (18).

i. Remove washer (9) from rod (18).

j. Slide rod (18) from head (11).

k. Remove two screws (17) from head (11).

l. Remove retainer (15) and packing assembly (14) from head (11).

m. Remove packing set (14) from retainer (15).

n. Remove threaded head (19) and seal (16) from piston rod (18).

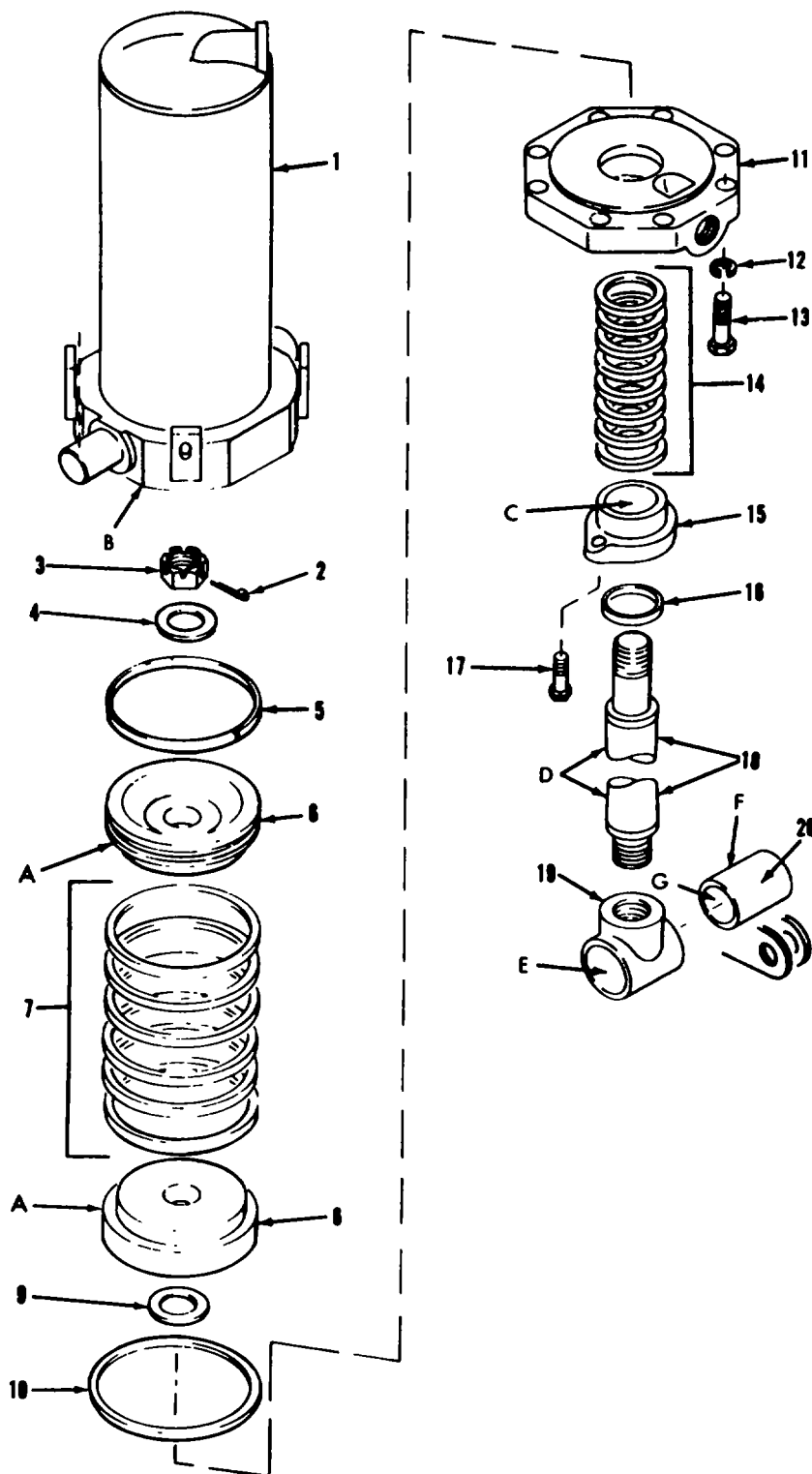
o. Drive two bushings (20) from ram head (19).

**Table 6-4. Repair Standards for
Power Takeoff Right-Angle Drive**

Figure Reference Number	Ref- Point of Letter	Measurements	Wear Limits
6-8	A	OD of piston (two pistons)	6.9740
6-8	B	ID of cylinder bore	7.021
6-8	C	ID of packing retainer	2.507
6-8	D	OD of piston rod	2.497
6-8	E	ID of ram head bore	2.375 to 2.376
6-8	P	OD of bushing	2.377 to 3.379
6-8	G	ID of bushing	2.006

Legend to figure 6-8:

1	Cylinder	6	Piston	11	Head	16	Seal
2	Cotter pin	7	Packing assembly	12	Lockwasher (8)	17	Screw (2)
3	Nut	8	Piston	13	Screw (8)	18	Rod
4	Washer	9	Washer	14	Packing assembly	19	Head
5	Preformed packing	10	Preformed packing	15	Retainer	20	Bushing (2)



TA170004

Figure 6-8. Disassembly or assembly of blade assembly cylinder and ram.

6-30. Cleaning. Refer to paragraph 5-5 for cleaning instructions.

6-31. Inspection. Check the components for wear limit as specified in table 6-4.

6-32. Assembly (Fig 6-8).

a. During assembly, replace with new preformed packing, seals, and/or all worn or deformed parts.

b. Install two bushings (20) in head (19).

c. Connect threaded head (19) to rod (18).

d. Install packing assembly (14) into internal bore of head (11).

e. Using two screws (17), secure retainer (15) to head (11).

f. Install seal (16) in retainer (15).

g. Slide piston rod (18) into head (11) bore.

h. Slide washer (9) over rod (18).

i. Install piston (8) on rod (18).

l. Install packing assembly (7) on piston (8).

k. Install preformed packing (5) on piston (6). Install piston (6) on rod (18) to mate with packing set (7).

l. Install washer (4) and nut (3) on rod (18) and secure with cotter pin (2).

m. Install preformed packing (10) in cylinder (1).

n. Slide piston assembly into cylinder (1).

o. Install eight lockwashers and screws (12 and 13) to secure head (11) to cylinder (1).

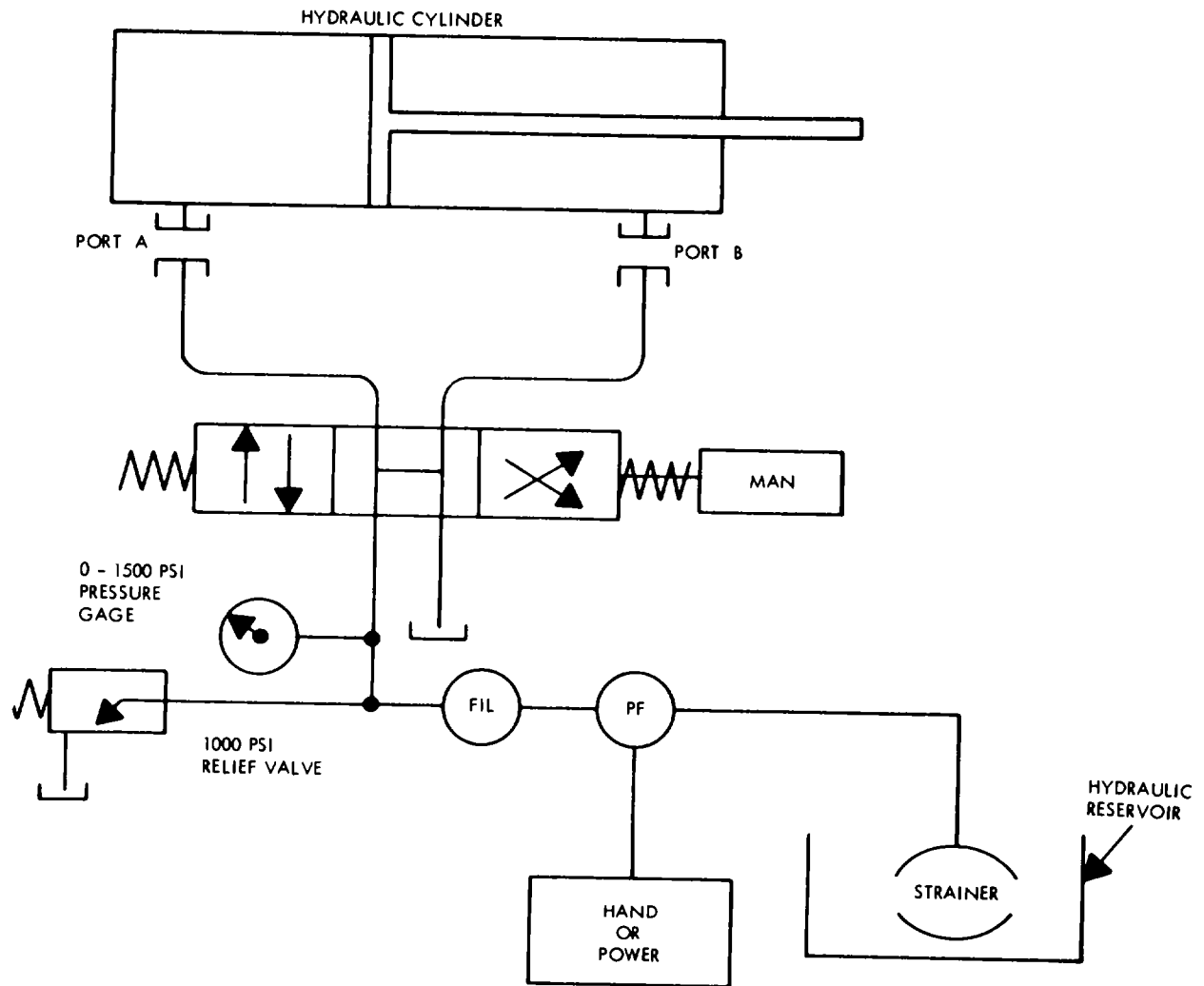
6-33. Test. To test the hydraulic cylinder and ram, proceed as follows:

a. Connect a test arrangement to the cylinder as shown in figure 6-9.

b. Cycle the hydraulic cylinder through its full stroke at least five times by applying pressure alternately to port A and B. There should be no exterior leakage. Leakage past the rod seals during cycling test should not form one drop.

c. Apply pressure at port B and retract the cylinder to its minimum length and then disconnect the line at port A. This leakage should not exceed 3 cubic inches per minute during the fifth minute of a 5-minute pressure test period. There should be no rod seal leakage or exterior leakage.

6-34. Installation. Refer to paragraph 4-36.



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Figure 6-9. Testing arrangements for hydraulic cylinder and ram.

6-17/(6-18 blank)

CHAPTER 7

FINAL INSPECTION

7-1. General. A final inspection will be performed on all items repaired or replaced to determine whether all necessary work has been accomplished and to determine whether repairs have been performed satisfactorily. This inspection involves visual checks, checks with test instruments, operational checks, safety checks, or any combination necessary

to insure that the equipment has been restored to a completely serviceable condition for return to the user or to stock.

7-2. Specific Procedures. Specific checks to be performed on items repaired or replaced are contained, where necessary, in the component repair or installation instructions.

7-1/(7-2 blank)

CHAPTER 8

REWORK VEHICLE COMPONENTS FOR KIT INSTALLATION

Section I. PREPARATION OF VEHICLE

8-1. General. This section provides the instructions for preparation and rework of M60, M60A1, M60A1 RISE, and M60A3 tank components prior to installation of the M9 bulldozer kit

8-2. Initial Preparation..

- a. Position the tank on a smooth, level working area.
- b. Open the top deck grille doors and engine exhaust rear grille doors. Remove the transmission shroud to ventilate the engine compartment prior to welding on the vehicle.

Section II. REWORK OF TANK

8-3. General. This section provides instructions for the necessary rework to the tank as shown on figures 8-1 through 8-14.

8-4. Templates and Fixtures (Fig 8-1).

- a. View A shows mounting brackets for installation of manifold mounting lugs.
- b. View B shows fender and shield template.
- c. View C shows eye assembly for installing the mounting brackets.
- d. Views D and E show shock mounting fixtures.

8-5. Rework Transmission Shroud (Fig 8-2) (Early Model Kit Only).

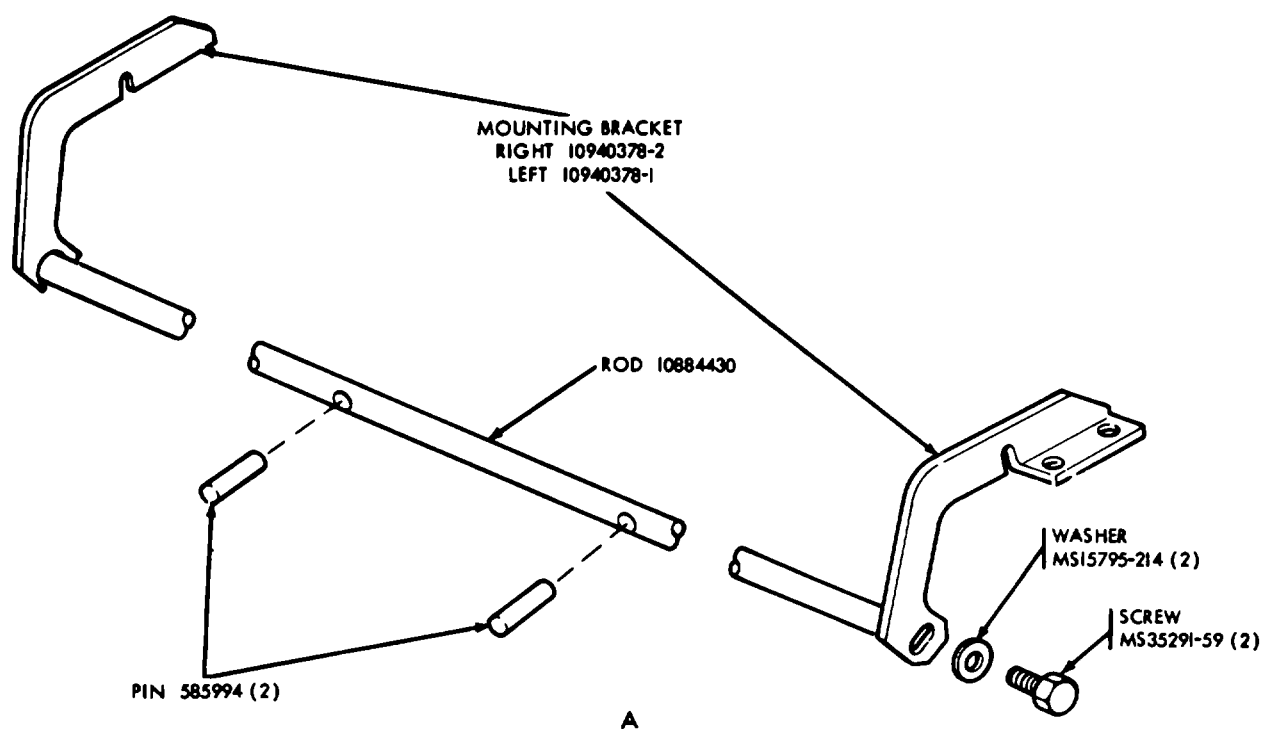
- a. Cut out access door (view A).
- b. Attach hardware to access door (view B).

8-6. Rework Grille Doors (Fig 8-3).

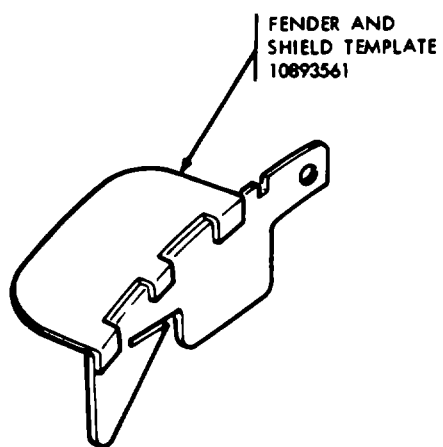
- a. Build-up hinge on left top grille door with weld (view A).
- b. Reverse lower left hinge pin on engine exhaust left access door (view B).

8-7. Rework Manifold Mounting Lugs (Fig 8-4).

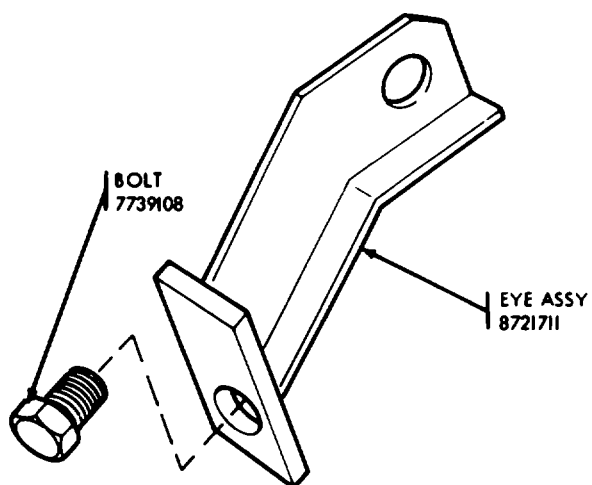
- a. Remove vehicle headlamp brush guard assemblies. Stow brush guards in left rear fender box. Remove headlamps, and install receptacle covers (view A).
- b. Install rod mounting brackets (view B).
- c. Check installation of pins in rod (view C).
- d. Install lugs against pins on rod, and install rod (view D).



A



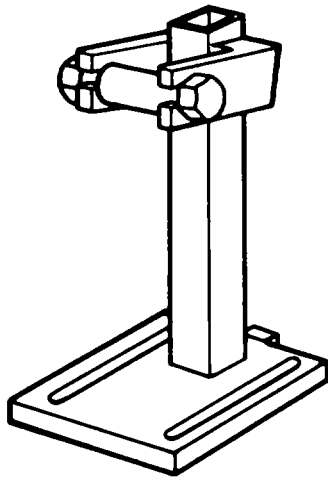
B



C

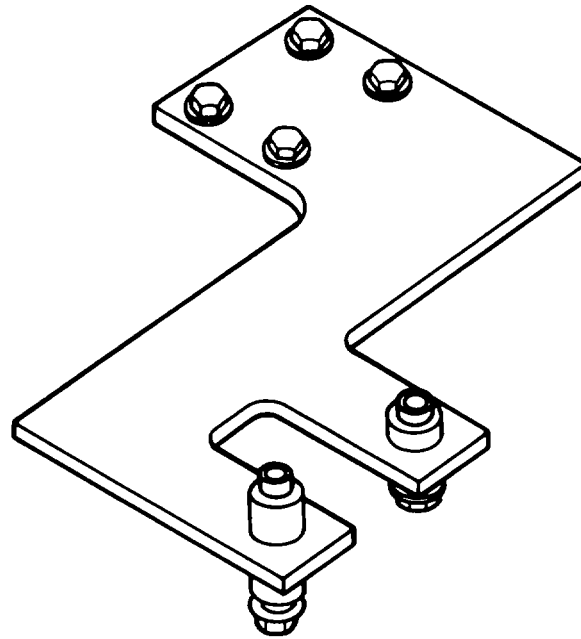
TA170006

Figure 8-1. Templates and fixtures (sheet 1 of 2).



FIXTURE - 12257357

D



FIXTURE - 12257356

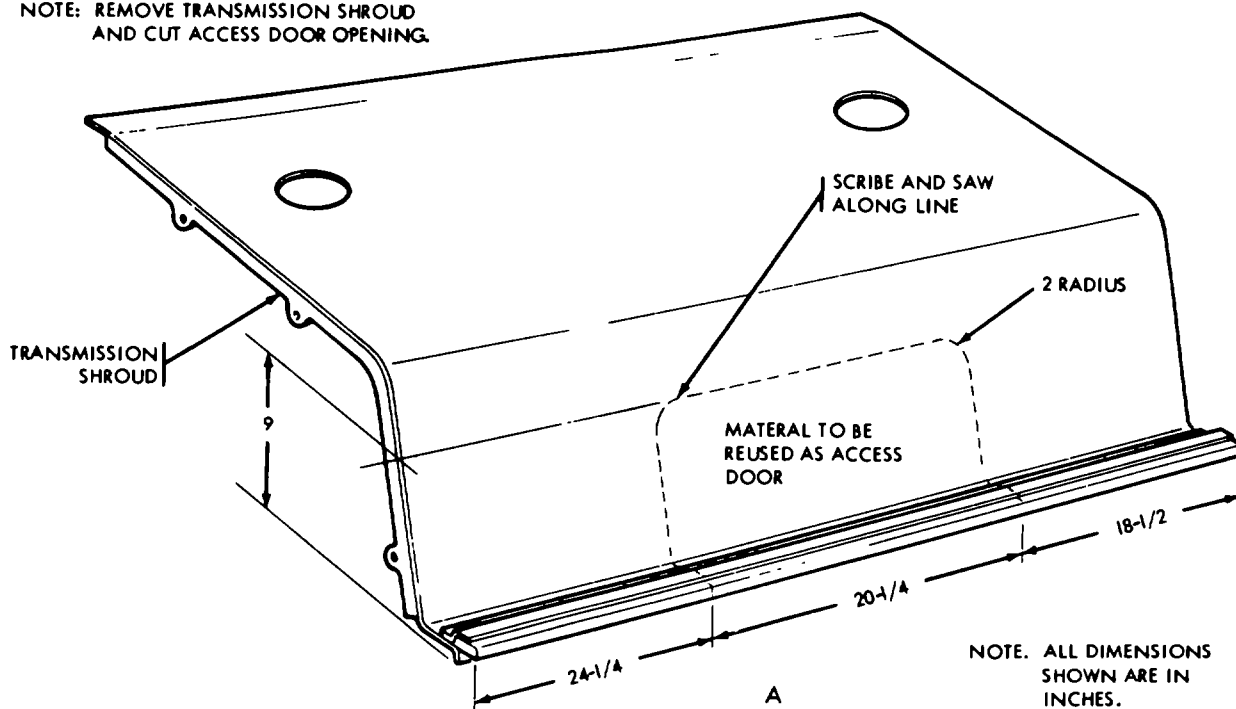
E

TA170007

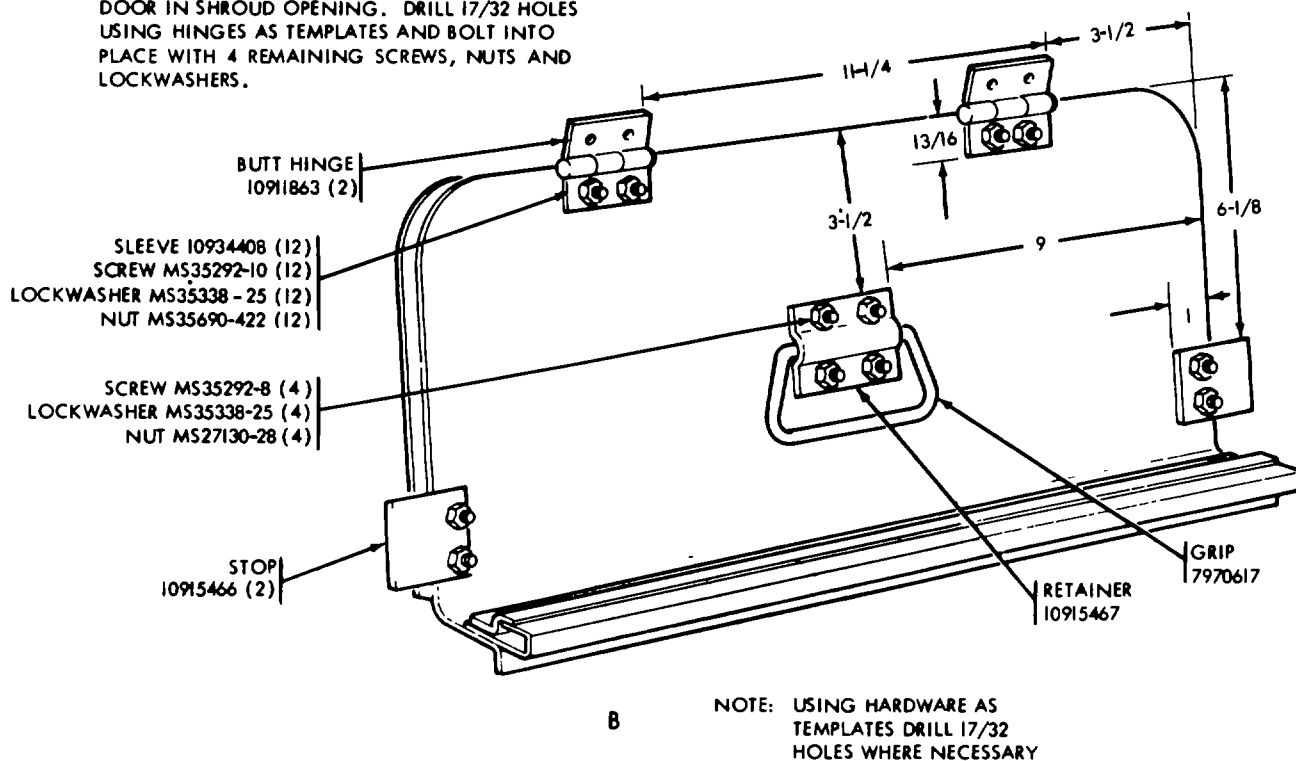
Figure 8-1. Templates and fixtures (sheet 2 of 2).

- e. Slide rod toward hull (view E).
- f. Tighten two screws (view E).
- g. Hold lugs square against pins to insure proper fit during welding (view F).
- h. Tack weld lugs (view F).
- i. Remove pins and rod. Check control valve manifold assembly for proper fit.
- J. Weld two lugs in place (view G).

NOTE: REMOVE TRANSMISSION SHROUD AND CUT ACCESS DOOR OPENING.



NOTE: AFTER ATTACHING HARDWARE, POSITION ACCESS DOOR IN SHROUD OPENING. DRILL 17/32 HOLES USING HINGES AS TEMPLATES AND BOLT INTO PLACE WITH 4 REMAINING SCREWS, NUTS AND LOCKWASHERS.



TA170008

Figure 8-2. Rework of transmission shroud for access door opening (early model bulldozer).

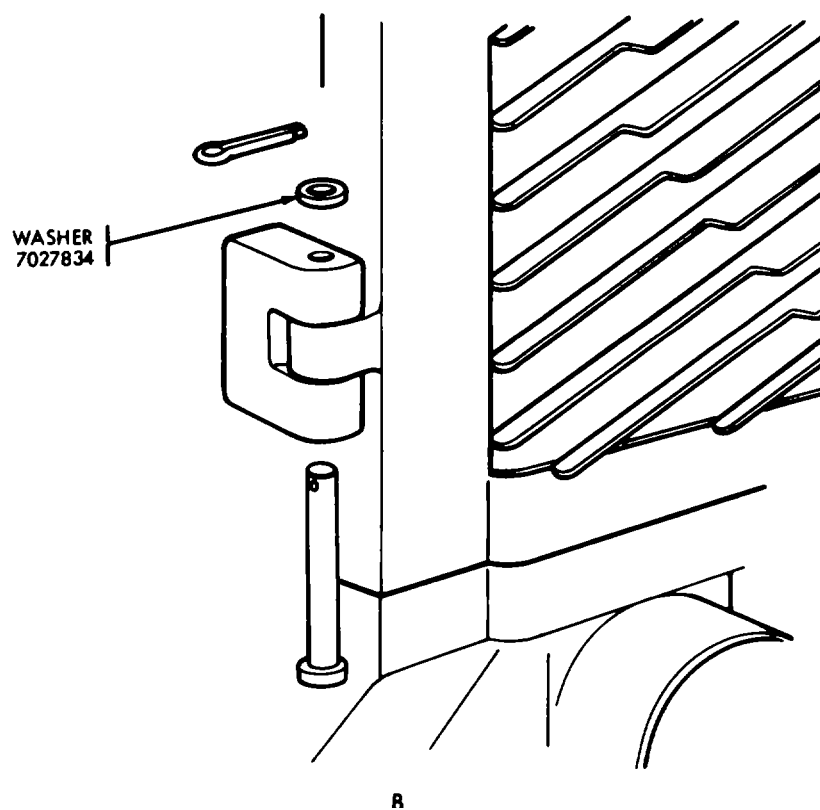
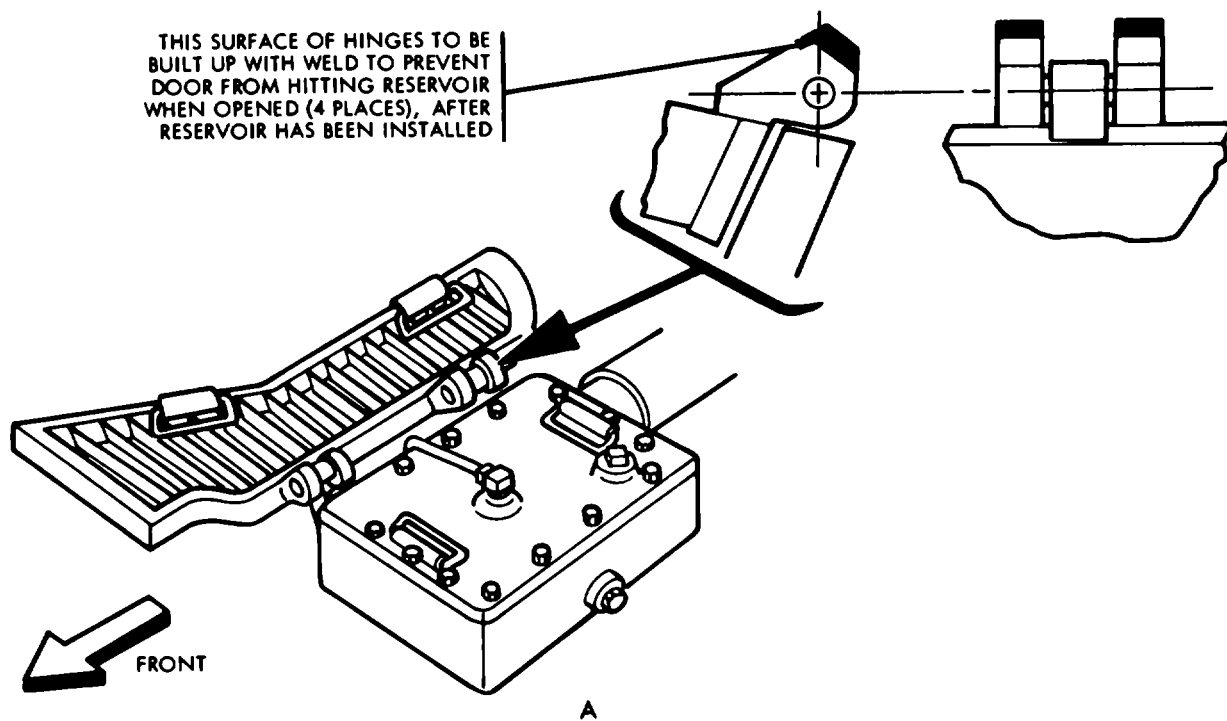
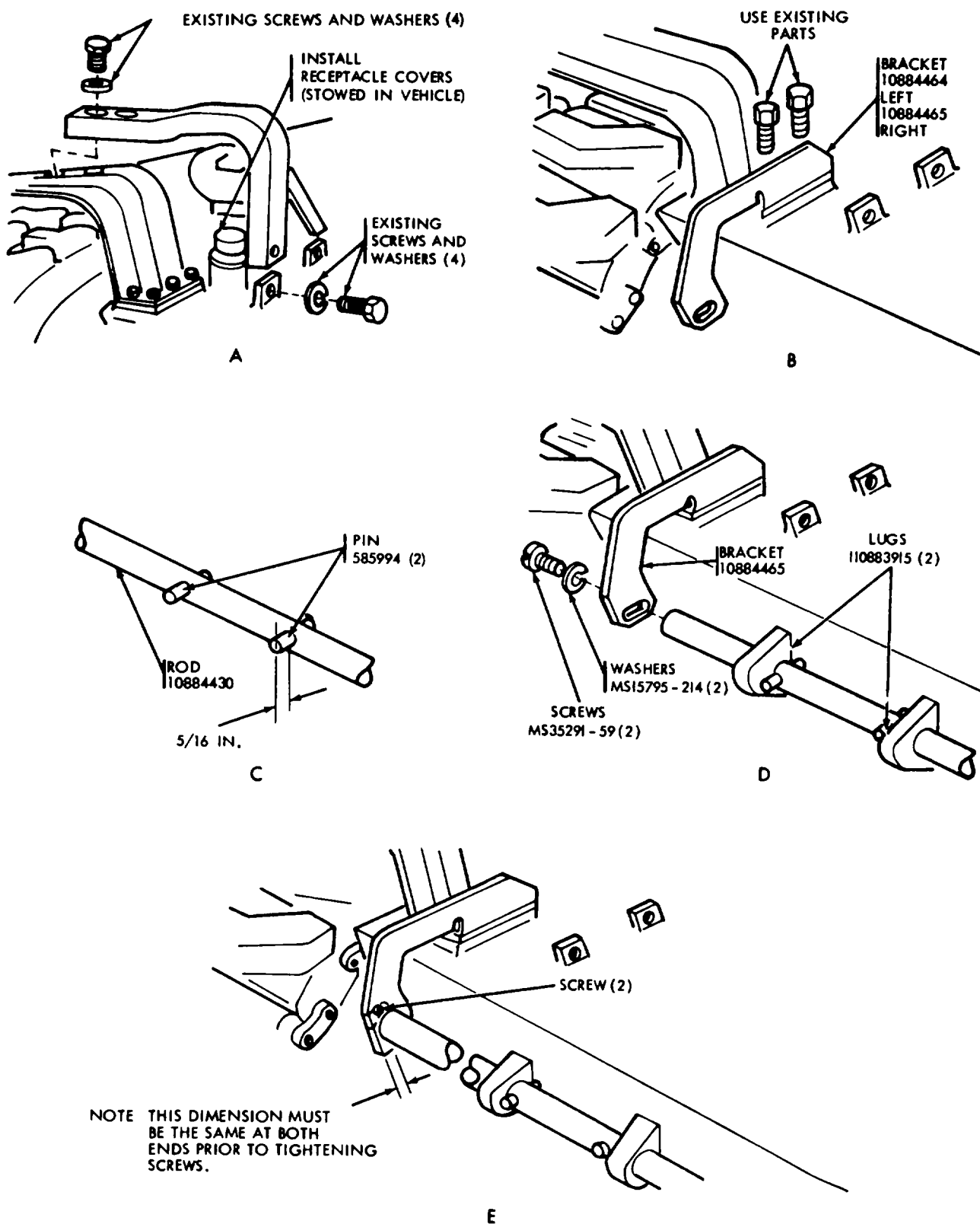


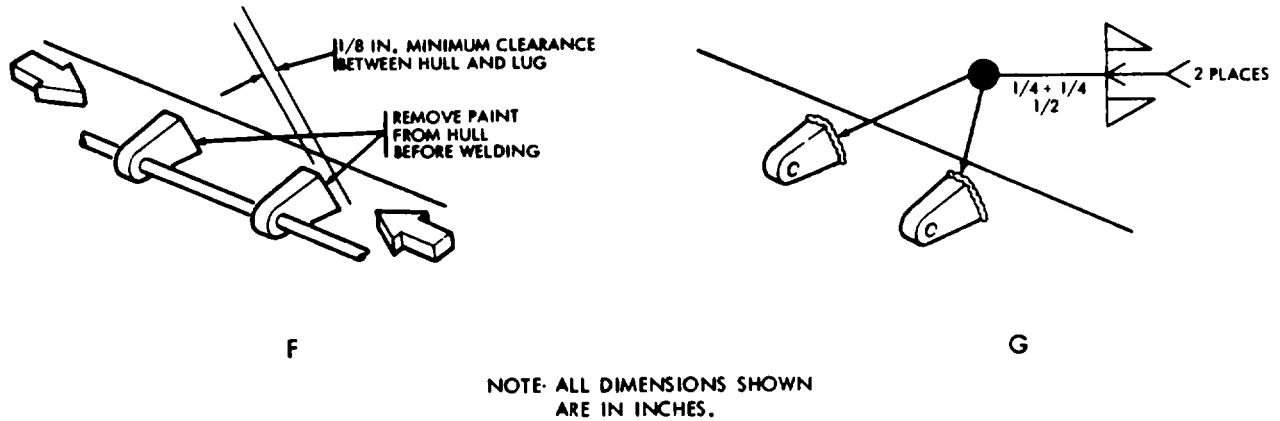
Figure 8-3. Hinge build-up and hinge pin reversal.

TA170009



TA170010

Figure 8-4. Welding mounting lugs in place (sheet 1 of 2).



TA170011

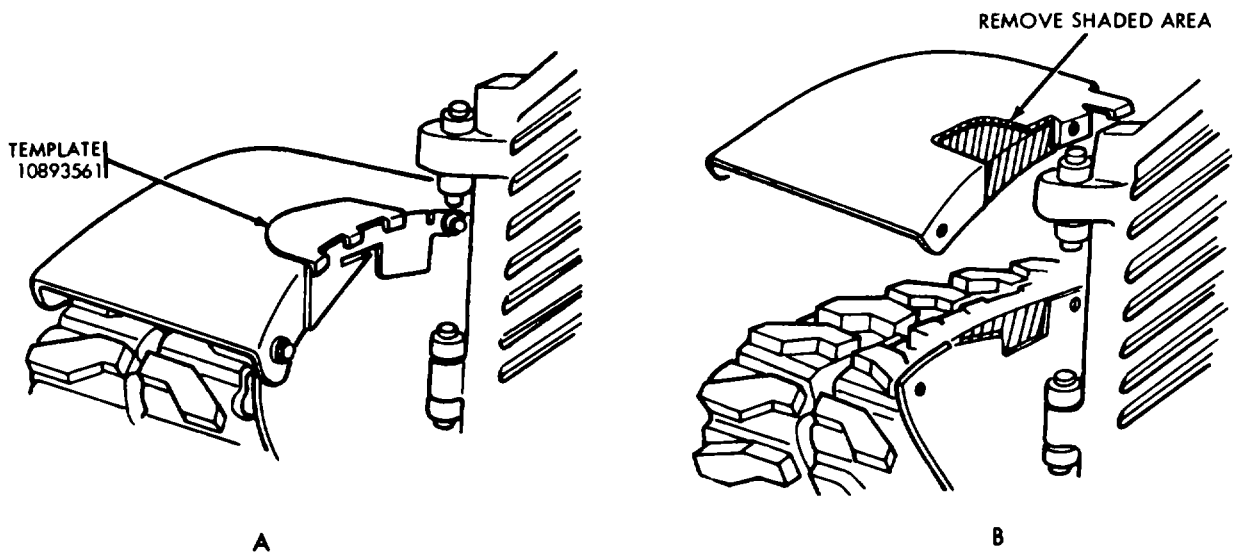
Figure 8-4. Welding mounting lugs in place (sheet 2 of 2).

8-8. Rework of Left Rear Fender (Fig 8-5).

- a Install left rear fender template (view A).
- b Rework fender and shield (view B)

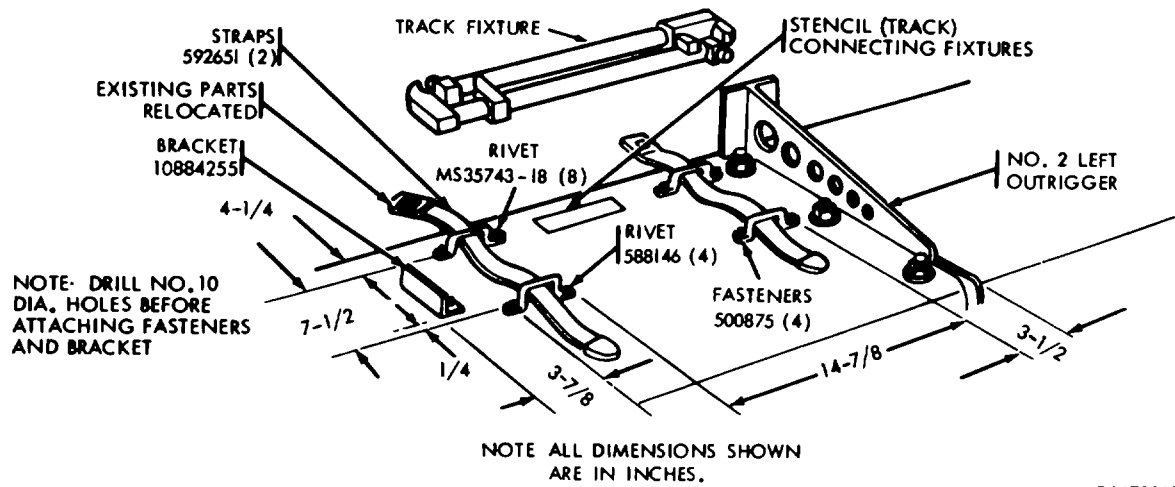
8-9 Rework of Left Front Fender (Fig 8-6).

- a Remove left front fender to install fasteners.
- b. Relocate track fixture from left rear fender to left front fender.



TA170012

Figure 8-5. Rework of left rear fender.



TA170013

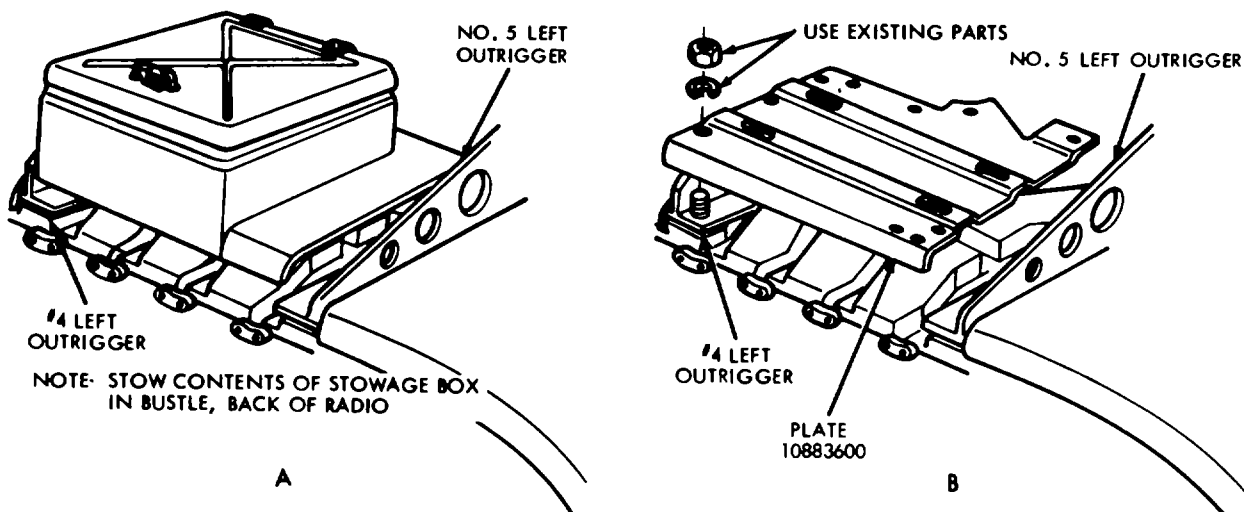
Figure 8-6. Rework of left front fender.

8-10. Rework of Left Rear Fender Stowage (Fig 8-7).

- a. Remove left rear fender stowage box and return spare (view A.)
- b. Install reservoir mounting plate (view B) dimensions (fig 8-8).

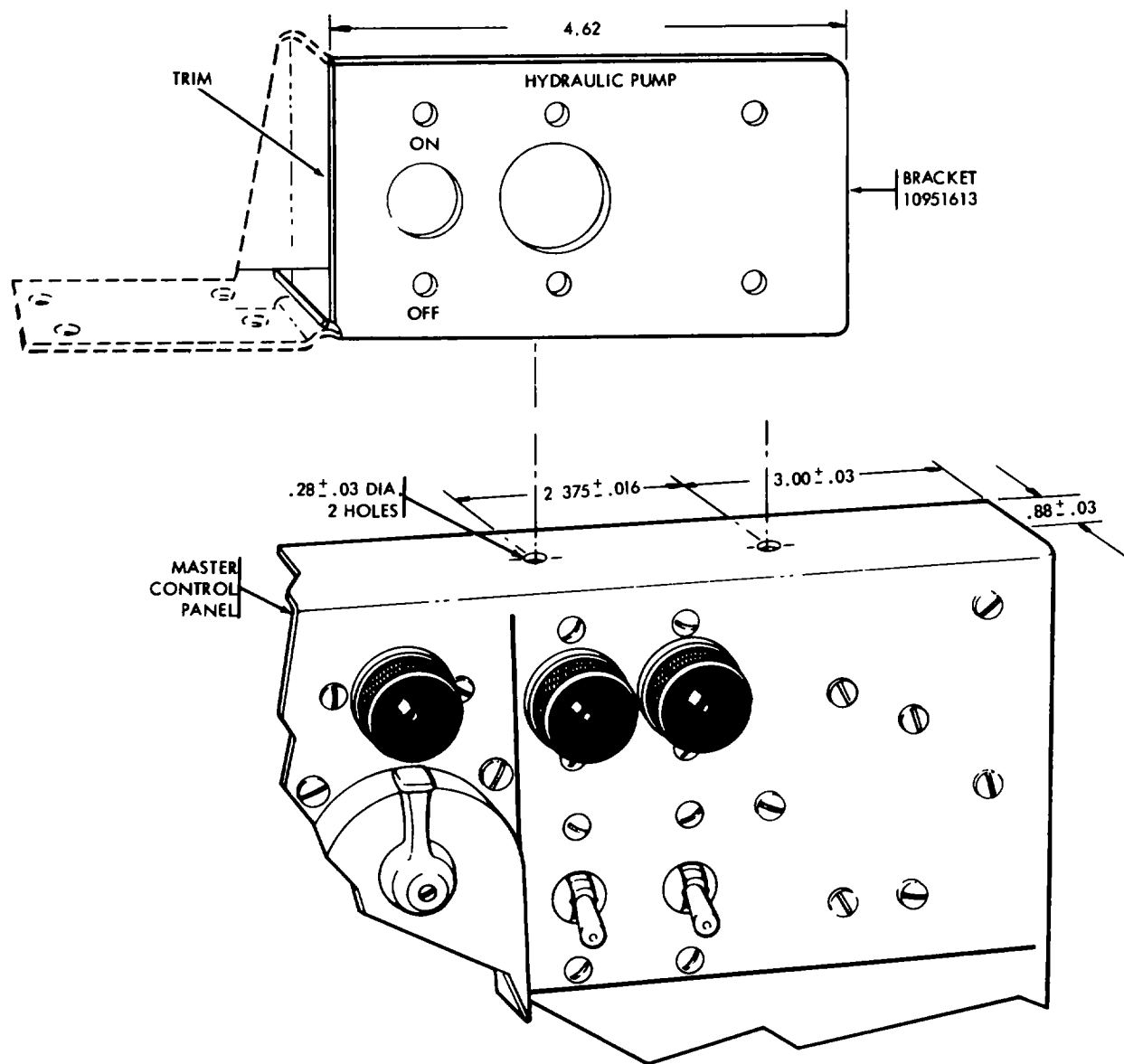
8-11. Rework of Master Control Panel (M60).

- a. Drill two holes in top of master control panel as shown on figure 8-8.
- b. Trim bracket 10951613 to fit di-



TA170014

Figure 8-7. Rework of left rear fender stowage.



NOTE
ALL DIMENSIONS
ARE IN INCHES.

TRIM BRACKET
10951613 TO FIT

TA170015

Figure 8-8. Rework of master control panel (M60).

8-12. Rework of Suspension System.

a. Remove suspension components as described below (from left side of vehicle only) to facilitate rework of suspension system to accept M9 bulldozer kit. Refer to figure 8-9 and TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE) or TM 9-2350-253-20-1 (M60A3) for removal procedures.

b. Disconnect and remove track from numbers 1 (1) and 2 (2) roadwheel arm positions.

c. Remove roadwheels from numbers 1 (1) and 2 (2) positions. Retain parts for installation.

d. Remove cotter pins (3) and pivot pins (4) and remove front shock absorber (5). Retain all parts for installation except cotter pins (3).

e. Remove cotter pin (3) and pivot pin (4) securing lower end of shock absorber number 2 (6).

f. Remove two screws (7), lockwashers (8), washers (9), and lift off two volute bumper springs (10). Discard two screws (7) and retain remaining parts for installation.

g. Remove front upper shock absorber mounting bracket (11) from hull, using cutting torch. Grind area smooth. Paint area in accordance with MIL-STD-193.

h. Remove torsion bar plug screw (12), lockwasher (13), plug (14), gasket (15), and torsion bar (16) from front roadwheel arm. Retain parts for installation.

i. Remove four screws (17) and lockwashers (18) securing torsion bar anchor cover (19) to front roadwheel support arm housing, and remove gasket (20) and anchor (21). Retain four screws (17), lockwashers (18) and anchor (21); discard cover (19) and gasket (20).

j. Mount shock mounting bracket fixtures 12257356 and 12257357 on volute

spring bracket (fig 8-10). Locate shock absorber upper bracket. Mark and trim bracket to contour of hull. Relocate, and tack weld in place. Remove fixtures and weld bracket to hull in accordance with MIL-W-46086, method 1.

k. Place stop 12257289-1 (left) or 12257289-2 (right) against bottom edge of volute bumper spring mounting surface, and weld in accordance with MIL-STD-1261, class 1.

l. Place support 12257288 against side bottom edge of volute bumper spring mounting area, and weld in place. Grind off excessive weld, prime and paint in accordance with MIL-STD-193.

m. Place gusset 12257287 and stop 12257286-1 (left) and 12257286-2 (right) to roadwheel arm number 2 stop, and weld. Prime and paint in accordance with MIL-STD-193.

n. Place spacer 12257291 between volute spring and mounting surface and secure with screw MS90727-169 and lockwashers and washers retained during removal.

o. Install torsion bar anchor (21), cover 10952230, and gasket 7014010 to numbers 1 and 2 roadwheel arms with retained screws and lockwashers.

p. Install torsion bar plug, gasket, screw, and lockwasher (retained during removal) to roadwheel arms numbers 1 and 2.

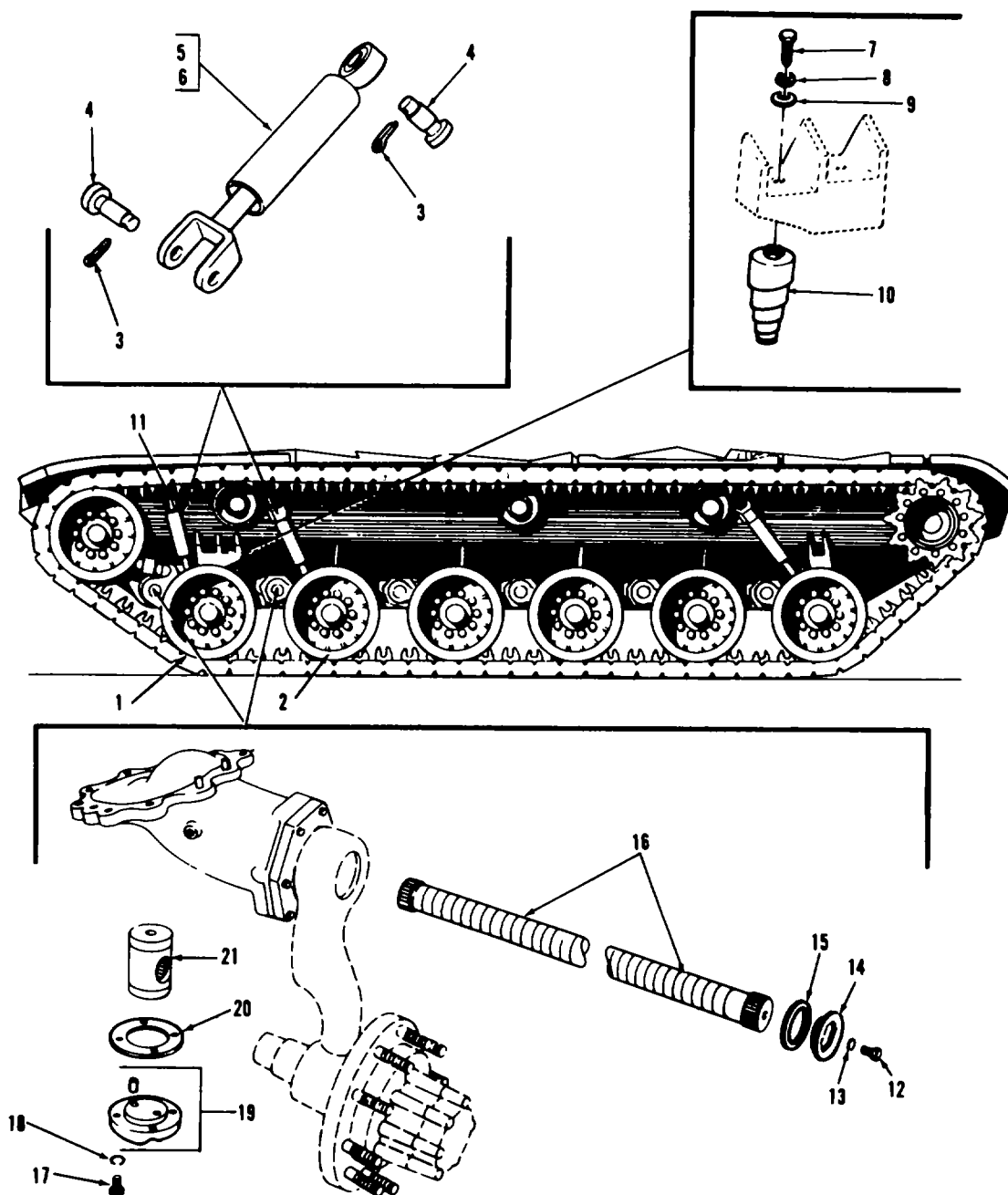
q. Install front shock absorber using pivot pin (retained during removal) and cotter pin MS24665-426.

r. Install pivot pin to lower end of shock absorber, and secure with cotter pin MS24665-426.

s. Install roadwheels and track. Refer to TM 9-2350-215-20 (M80, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

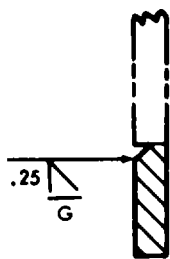
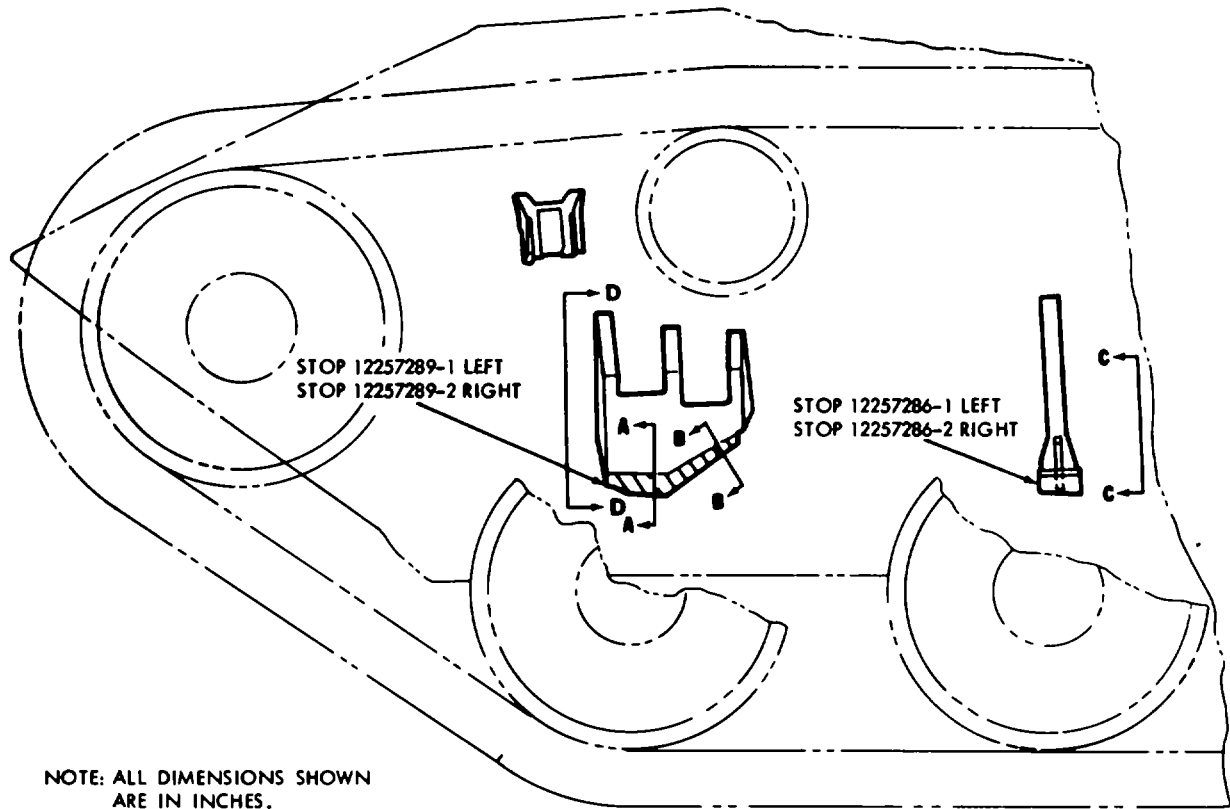
Legend for figure 8-9:

1	Roadwheel #1	5	Shock absorber	10	Volute bumper spring (2)	16	Torsion bar (2)
2	Roadwheel #2	6	shock absorber	11	Mounting bracket	17	Screw (8)
3	Cotter pin (3)	7	Screw (2)	12	Screw (2)	18	Lockwasher (8)
4	Pivot pin (3)	8	Lockwasher (2)	13	Lockwasher (2)	19	Cover (2)
		9	Washer (2)	14	Plug (2)	20	Gasket (2)
				15	Gasket (2)	21	Anchor

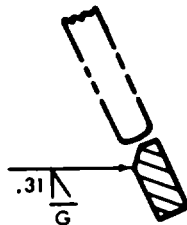


TA170016

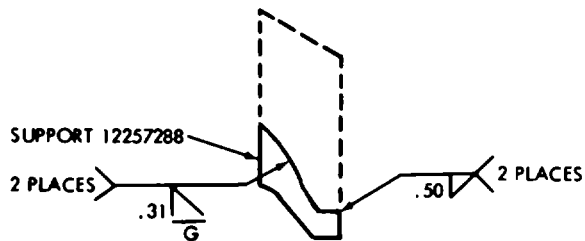
Figure 8-9. Rework of shock absorber and volute springs.



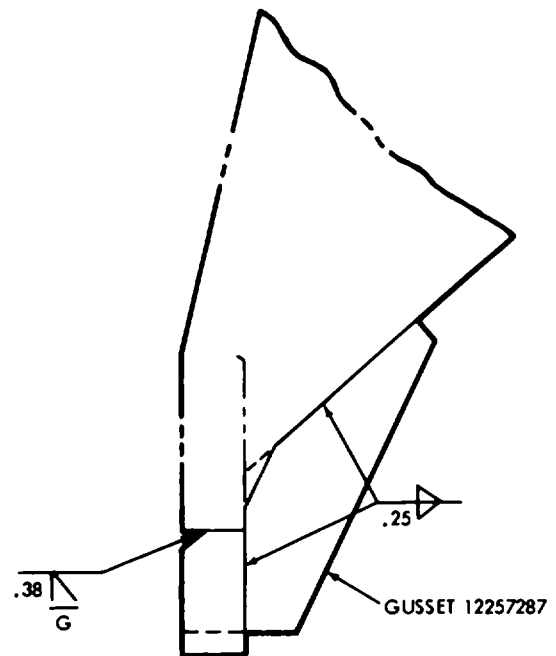
SECTION A-A



SECTION B-B



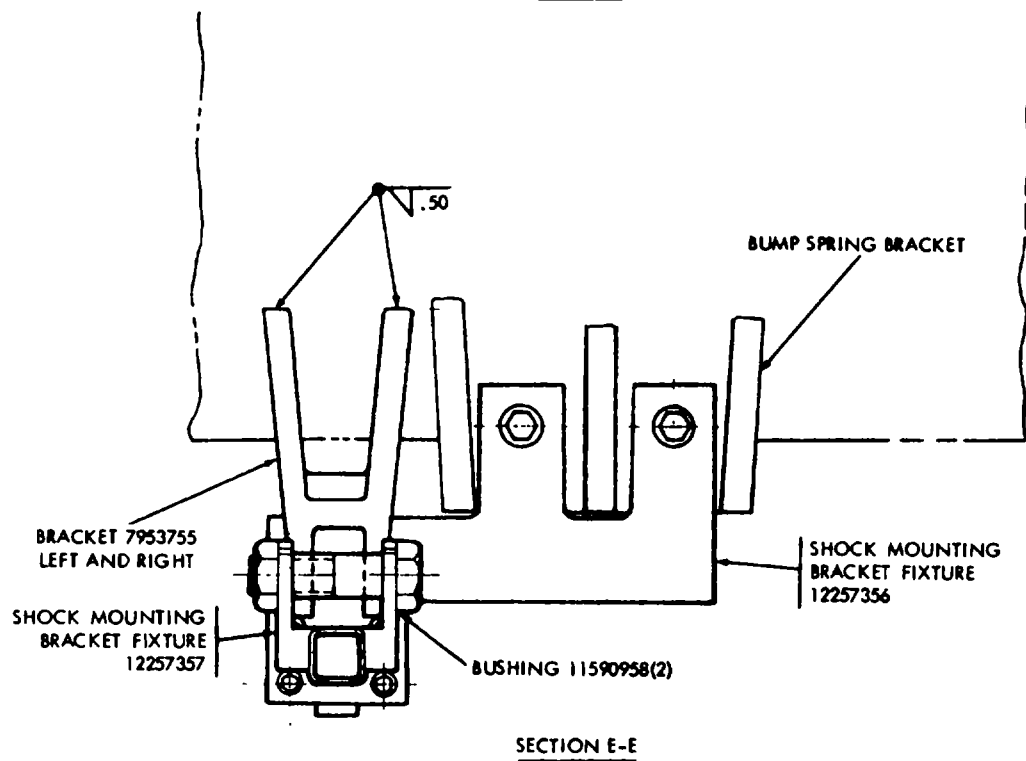
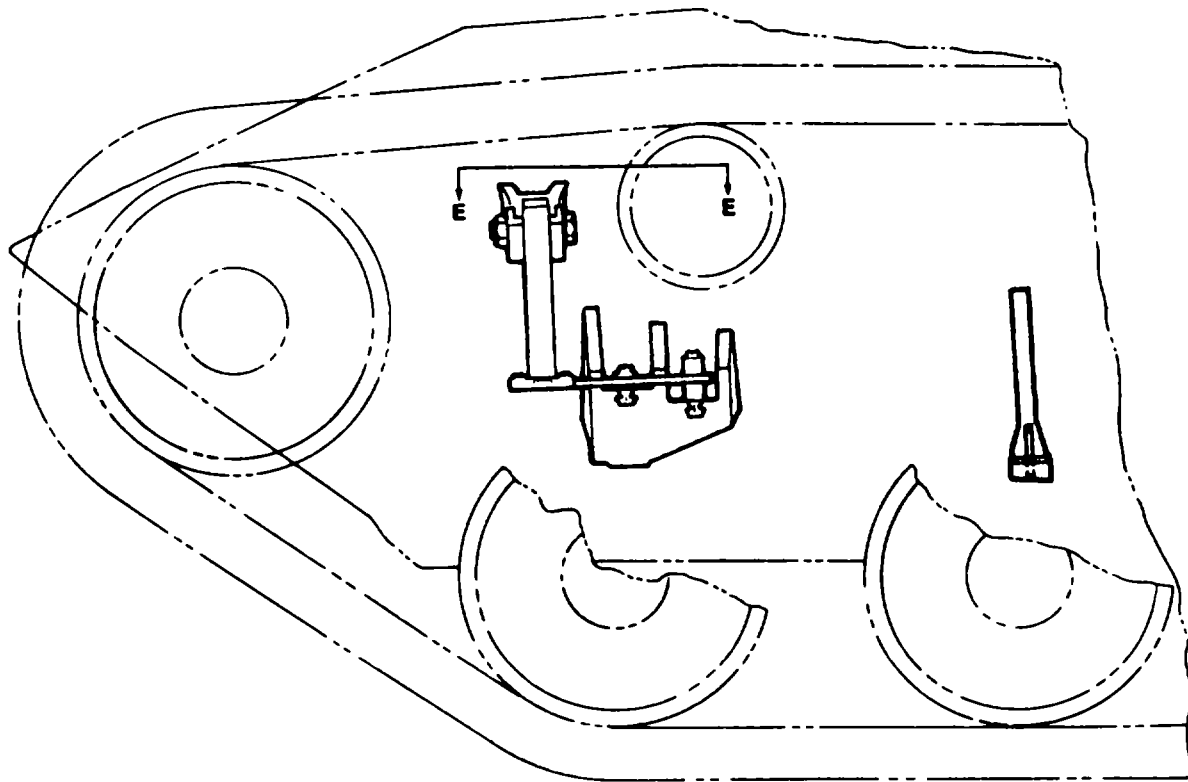
SECTION D-D



SECTION C-C

TA170017

Figure 8-10. Rework of suspension system (sheet 1 of 2).



TA170018

Figure 8-10. Rework of suspension system (sheet 2 of 2).

8-13. Rework of Outrigger and Air Cleaner Box.

a. Number 5 Left Outrigger:

(1) Locate correct spot on number 5 left outrigger and position plate 12257377 (fig 8-11).

(2) Weld plate to outrigger 3 places (8-11).

b. Air Cleaner Box.

(1) Mark dimensions as shown on figure 8-11 to upper front left air cleaner box side.

(2) Drill and tap hole 3/8-18 NPTF (fig 8-11). Use oil on drill and tap to prevent chips from falling into air cleaner.

8-14. Rework of Manifold Assembly Mounting Lug.

To provide adequate chamfer for welding, rework manifold assembly mounting lug by grinding the area indicated in figure 8-12 prior to installation.

8-15. Rework of Ram Head. If an interference is encountered during installation of the cylinder and ram assemblies, the ram head must be reworked by grinding to insure proper assembly to the blade pushbeam assembly (fig 8-13).

8-16. Rework of Gas Particulate Precleaner Filter Assembly. If an interference is encountered between the blade assembly control linkage arms and the gas particulate

precleaner filter, loosen the bracket mounting screws and shift the bracket (fig 8-14). If this does not provide sufficient clearance, elongate the mounting bracket holes to provide additional movement of the bracket (fig 8-14).

8-17. Rework of Hydraulic Pump Control Panel Bracket (Vehicles with Smoke Generator). For vehicles equipped with engine smoke generating system, follow the step-by-step procedures below.

a. Rework hydraulic pump control panel bracket as shown in figure 8-15.

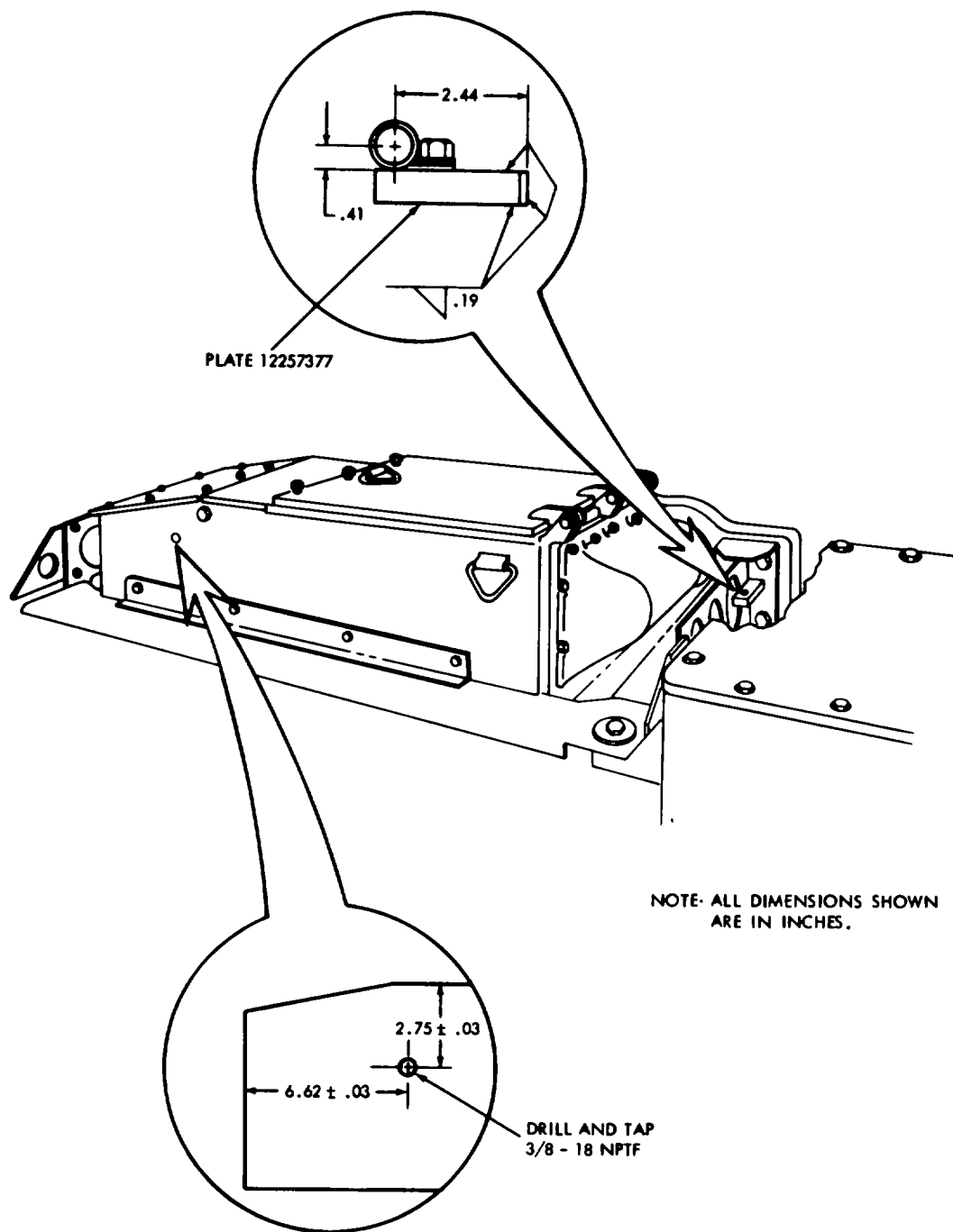
b. Remove and discard existing four screws and lockwashers securing smoke generator switch assembly to gauge indicator panel.

c. Position smoke generator switch assembly and pump control panel on gauge indicator panel and secure with four screws MS90726-9 and lockwashers MS35333-40.

d. Install pump switch to rear of bracket and secure with two screws and lockwashers (fig 4-29).

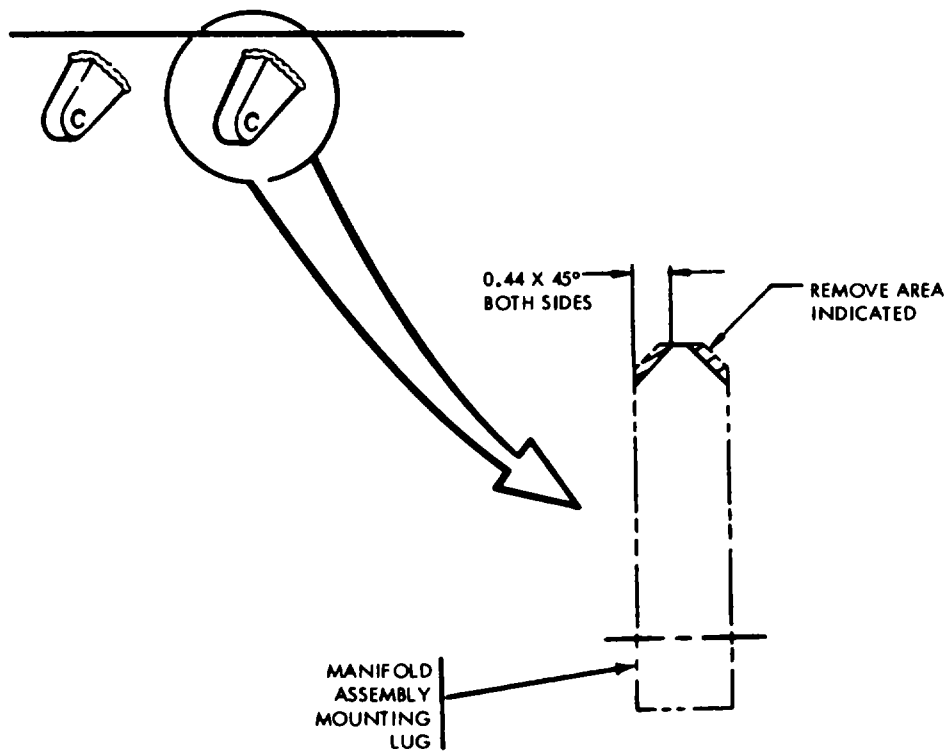
e. Install indicator to rear of bracket and secure with two screws and lockwashers. Install lens cap on indicator lamp (fig 4-29).

f. Install circuit breaker to rear of bracket and secure with two screws (fig 4-29).



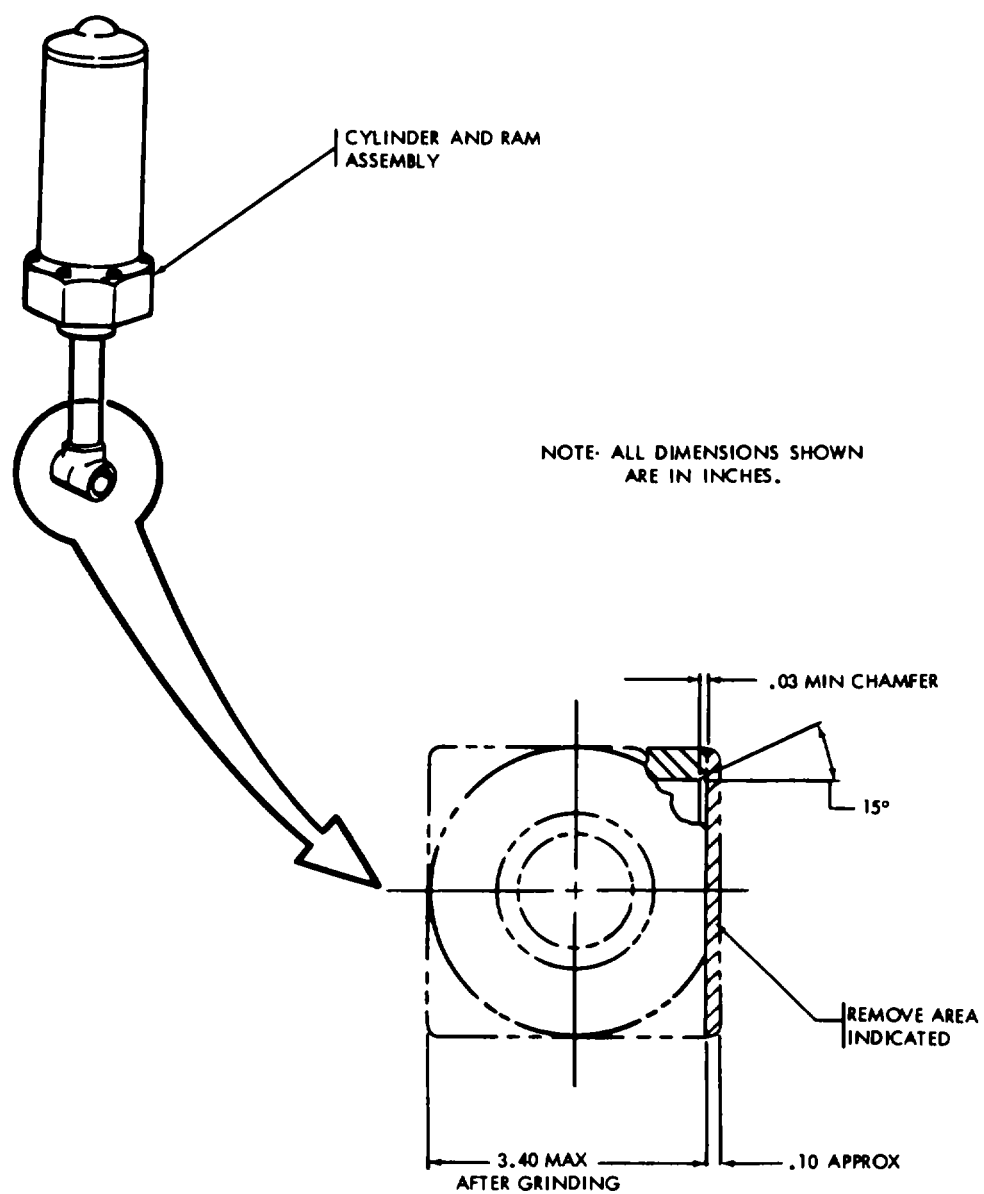
TA170019

Figure 8-11. Rework of outrigger and air cleaner box.



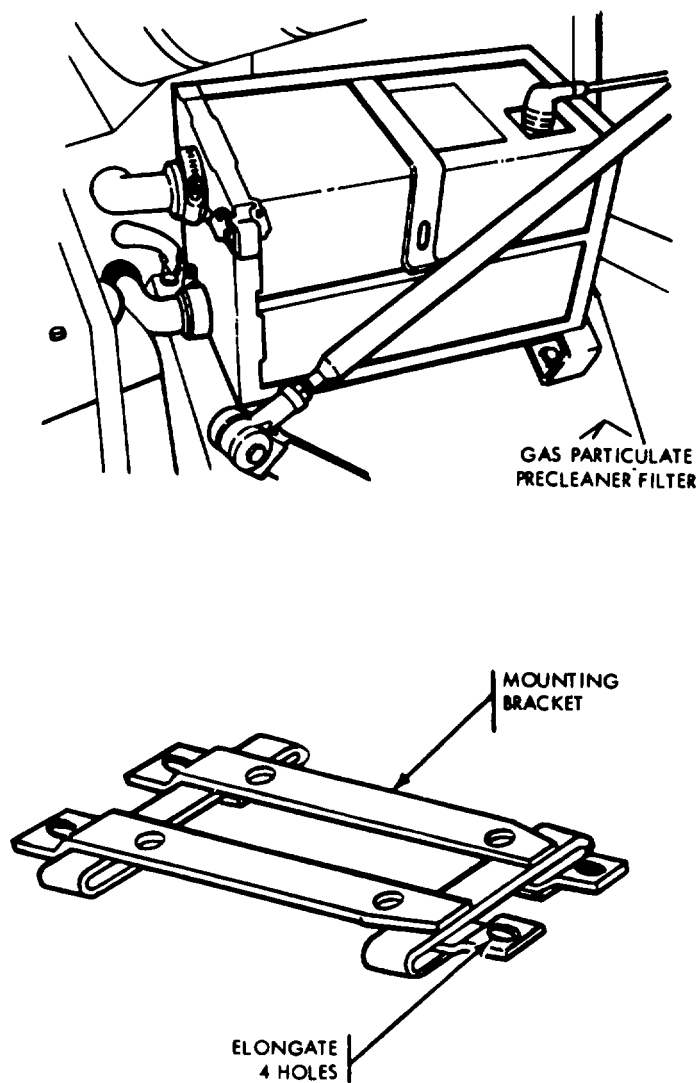
TA170020

Figure 8-12. Rework of manifold assembly mounting lug.



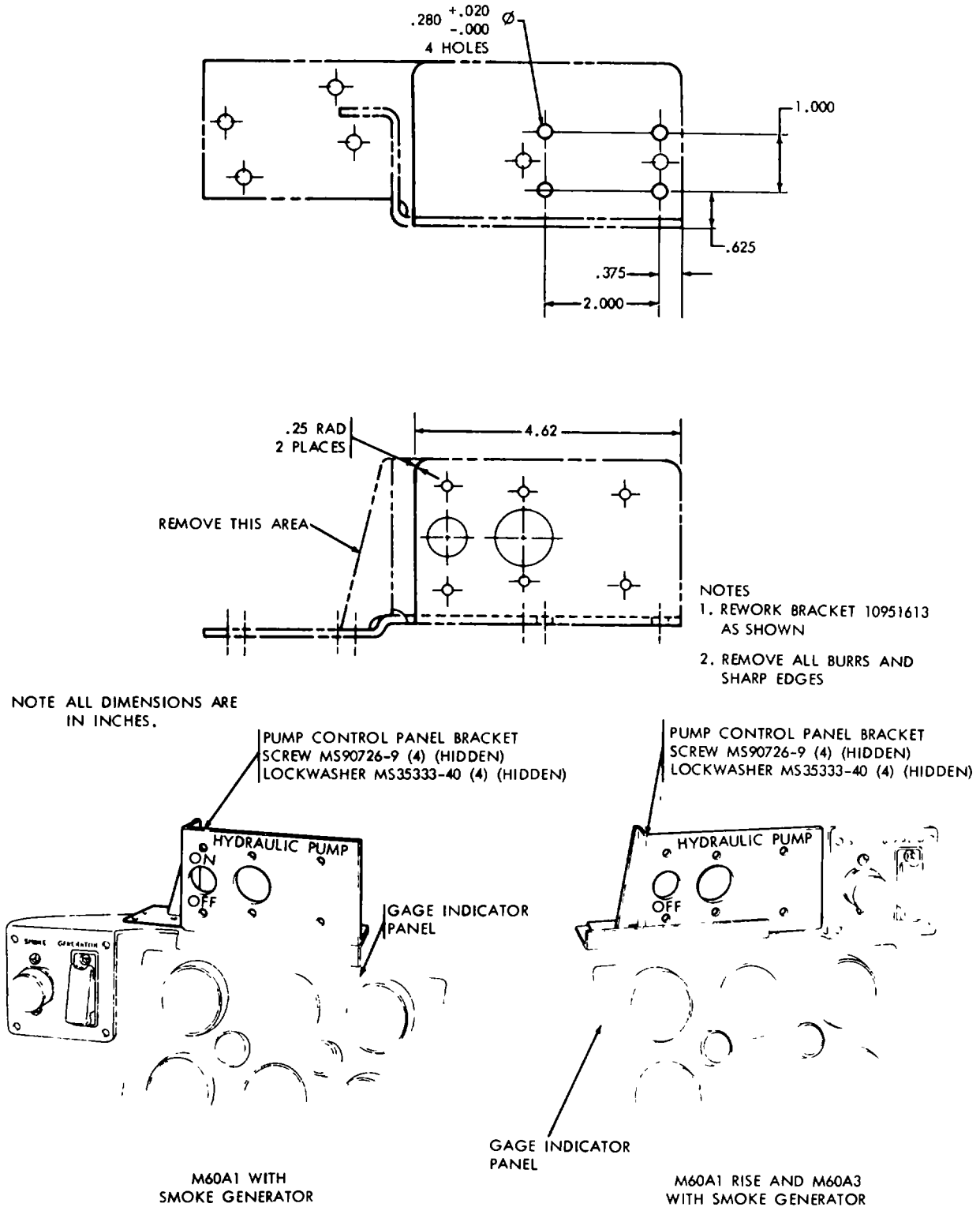
TA170021

Figure 8-13. Rework of ram head.



TA170022

Figure 8-14. Rework of gas particulate precleaner filter assembly.



TA170023

Figure 8-15. Rework of hydraulic pump control panel bracket (vehicles with smoke generator).

CHAPTER 9

Section I. GENERAL**9-1. Scope.**

- a. This chapter contains instructions for installing the M9 bulldozer kit.
- b. The bulldozer kit is shipped with some parts already assembled, and a number of those assemblies will require partial disassembly-

before installation on the vehicle. Before disassembling any of the material, identify each assembled group, loose parts, or individual assembly to make certain no parts are missing.

Section II. INSTALLATION OF CONTROL VALVE MANIFOLD ASSEMBLY

9-2. General. This section provides instructions for installation of control valve manifold assembly.

9-3. Control Valve Manifold (Fig 9-1).

- a. Using a suitable lifting device, position control valve manifold assembly on two lugs, and install two pins (view A). Use screws to hold two pads to manifold (view A).
- b. Use floor jack and hold control valve manifold assembly firmly against hull (view B).

- c. Tack weld two pads to hull (view B).
- d. Remove manifold assembly (view C).
- e. Weld two pads into position (view D).
- f. Install manifold assembly connections (view E).
- g. Attach manifold assembly to hull (view F).

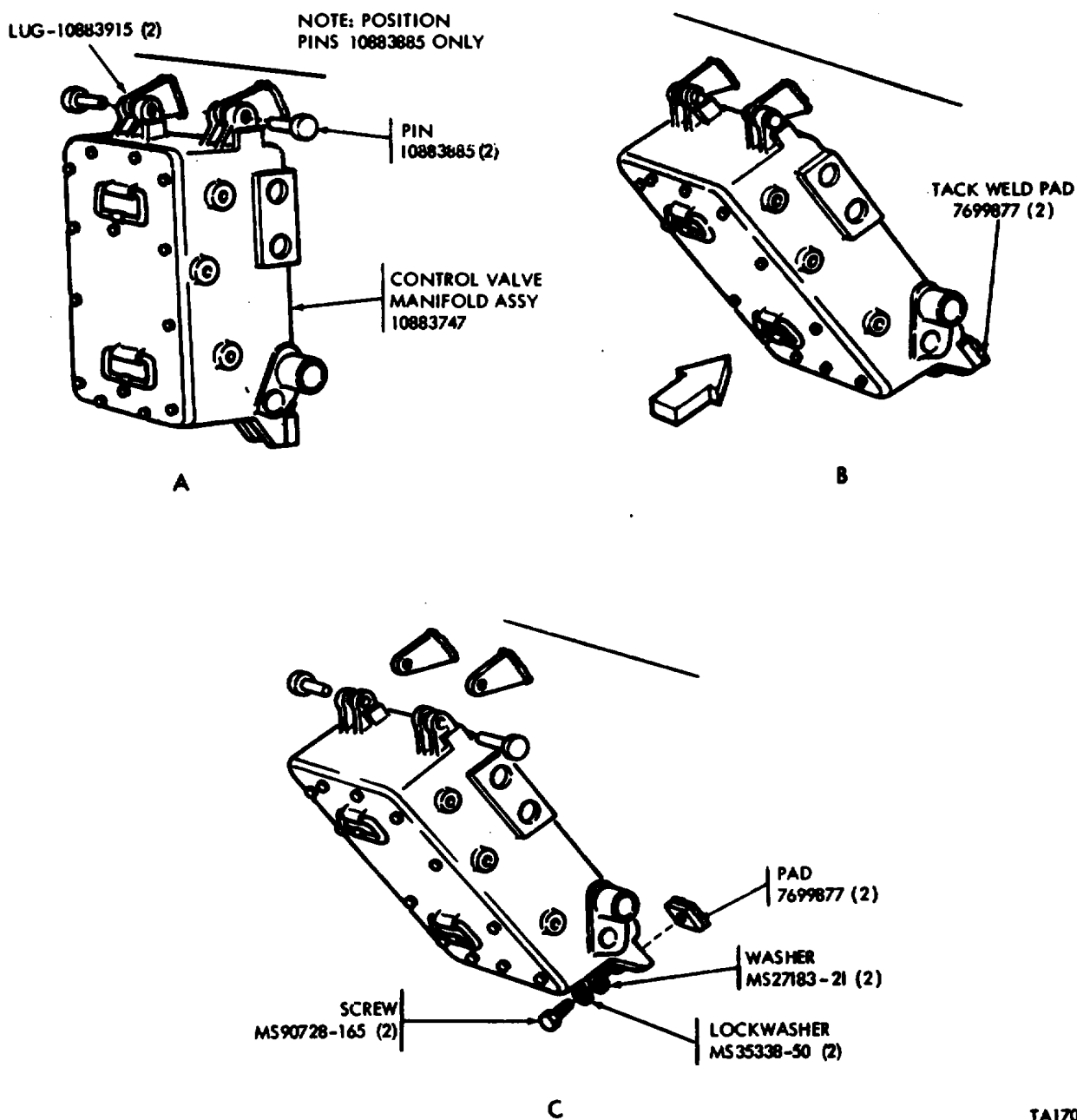
Section III. INSTALLATION OF LINKAGE GUARDS

9-4. General. This section provides instructions for the installation of the exterior linkage guards.

9-5. Linkage Guards (Exterior) (Fig 9-2).

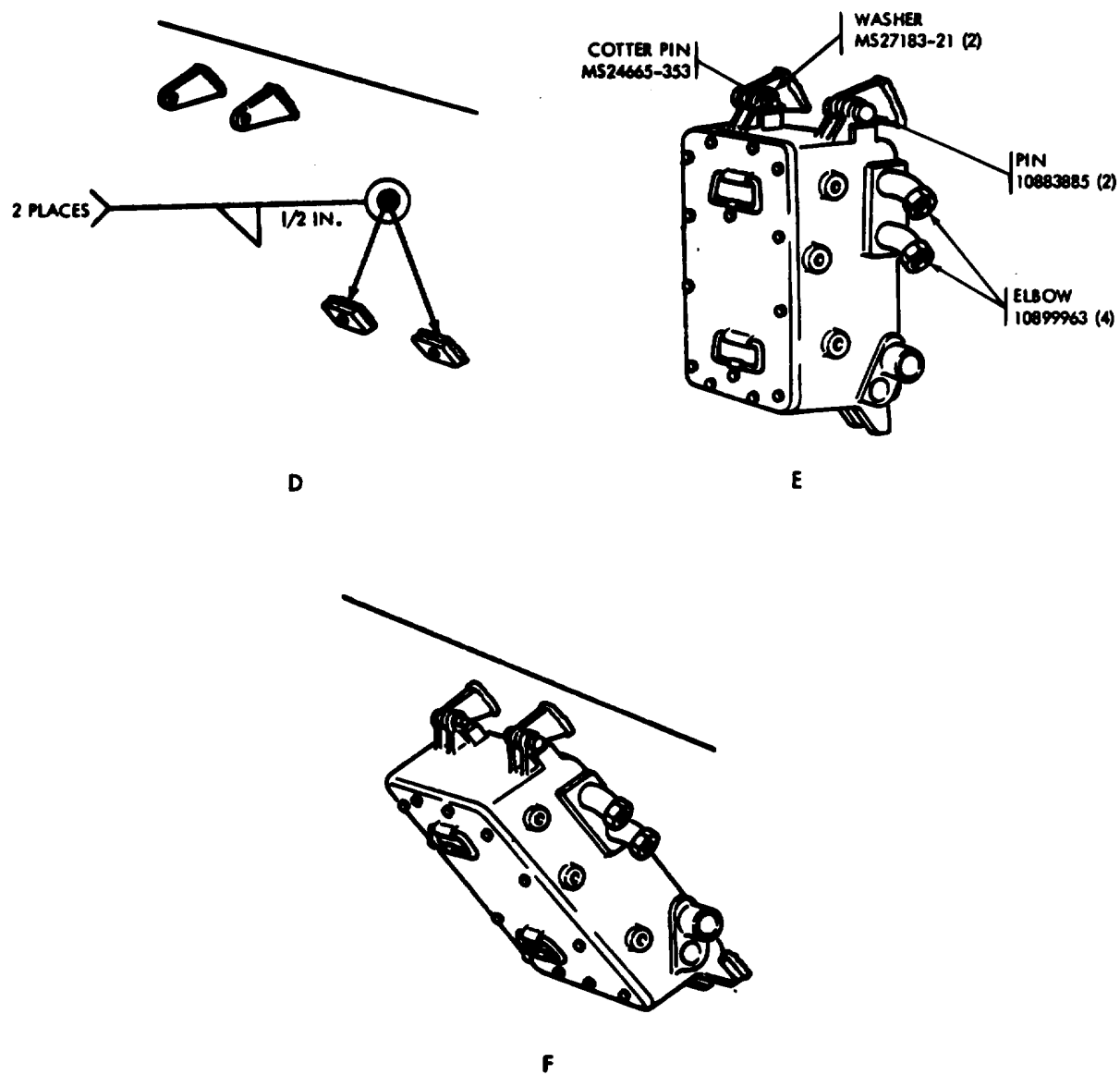
- a. Remove two screws and lockwashers from right front torsion bar housing (view A).
- b. Install housing assembly and tighten two screws (view A).

- c. Install guard torsion bar housing (view A).
- d. Install two guards and gasket to manifold and secure with six screws and lockwasher (view B).
- e. Insure housing assembly and two screws are tightened (view A), and weld guards together in plum (view C).



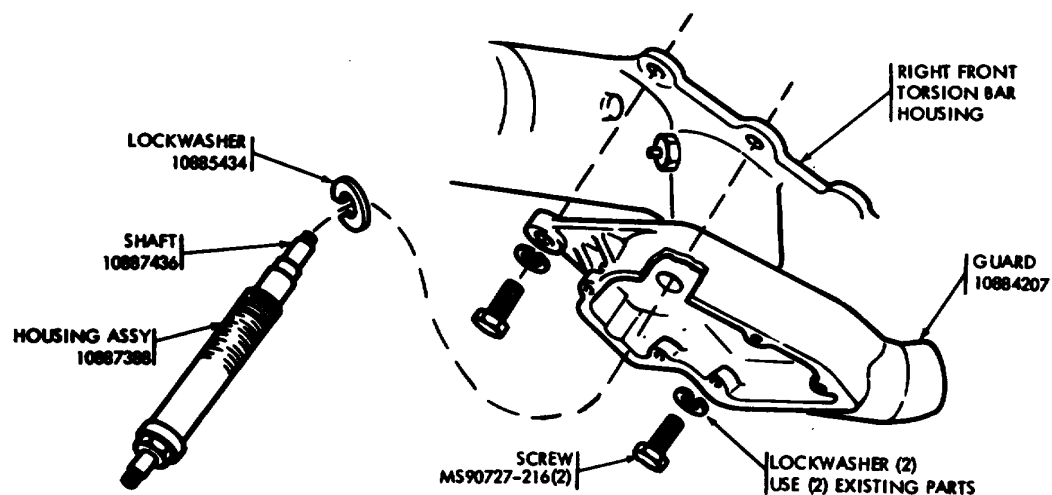
TA170024

Figure 9-1. Installation of manifold assembly (sheet 1 of 2).

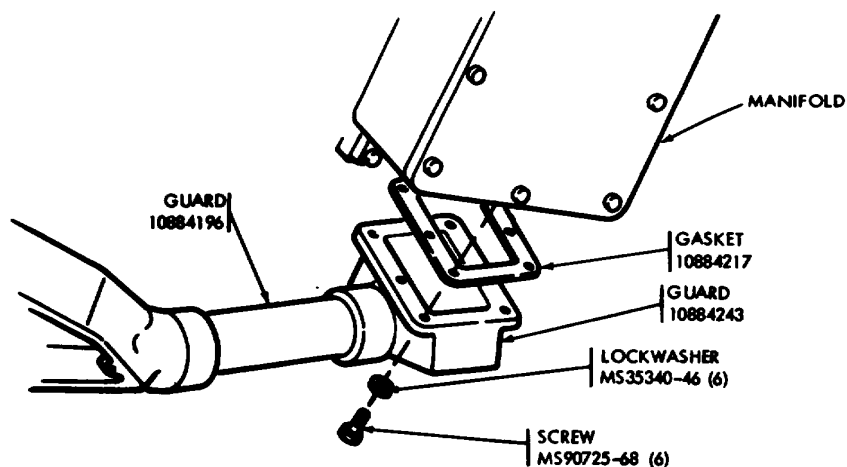


TA170025

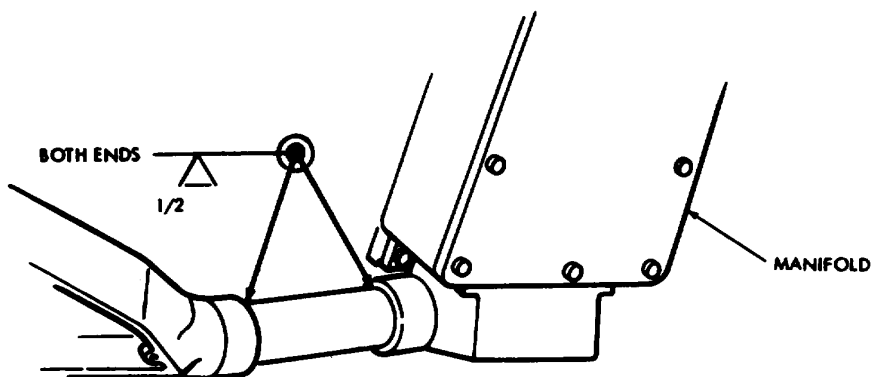
Figure 9-1. Installation of manifold assembly (sheet 2 of 2).



A



B



C

TA170026

Figure 9-2. Installation of exterior linkage guards.

Section IV. INSTALLATION OF EXTERIOR CONTROL ASSEMBLY

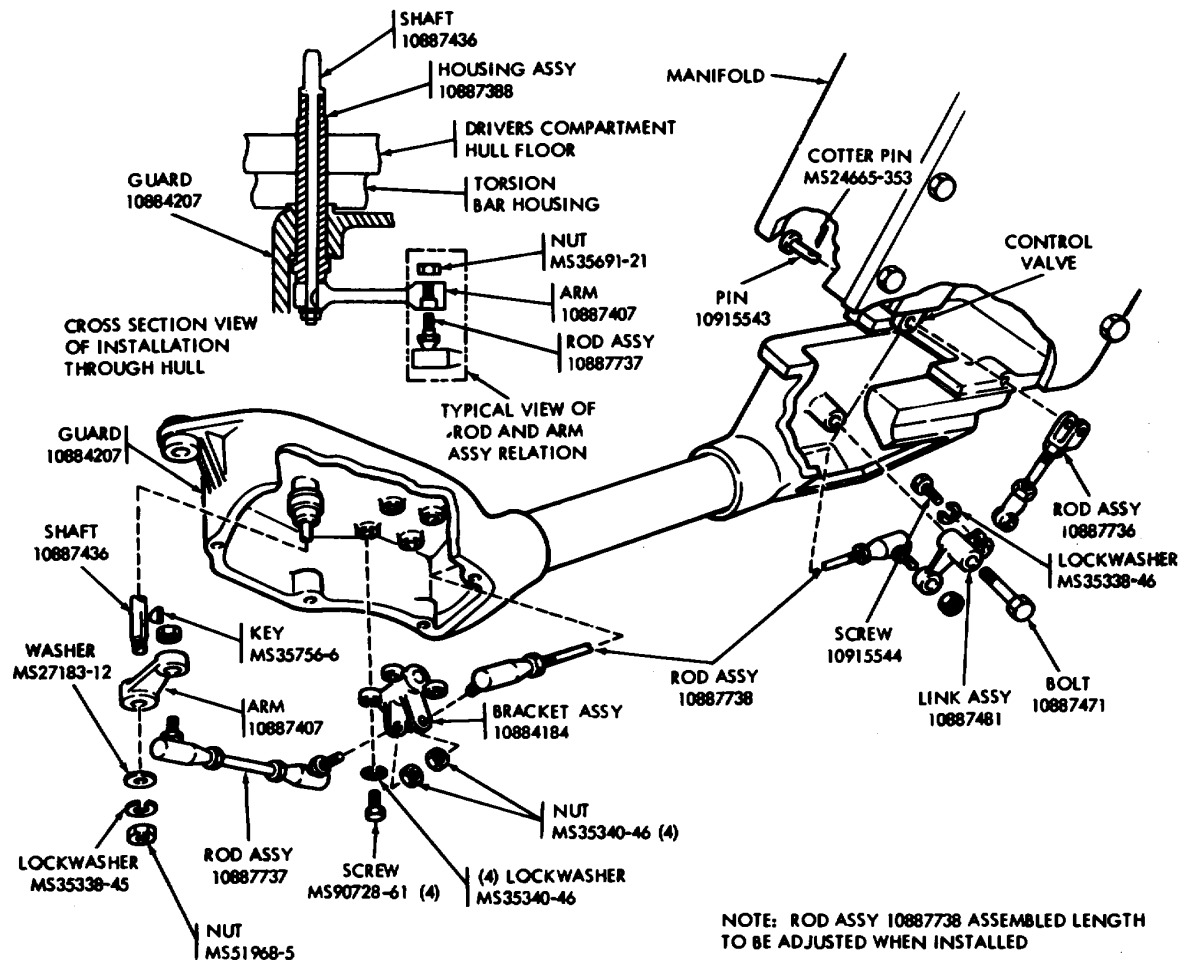
9-6. General. This section provides instructions for installation of the control linkage.

9-7. Control Linkage (Fig 9-3).

a. Install linkage to control valve and through hull

b. After satisfactory installation of controls, install gasket and cover, and secure with four screws and lockwashers.

c. Install gasket and cover, and secure with six screws and lockwashers.



TA170027

Figure 9-3. Installation of exterior control assembly.

Section V. INSTALLATION OF BLADE ASSEMBLY MANUAL CONTROL LEVER AND LINKAGE

9-8. General. This section provides instructions for the installation of blade assembly manual control lever and linkage.

9-9. Control Lever and Linkage (Interior).

NOTE

Refer to figure 9-4 for M60 vehicles and figure 9-5 for M60A1, M60A1 RISE, and M60A3 vehicles.

- a. Install control lever in driver's compartment (view A, fig 9-4 or 9-5).
- b. Install linkage (view B, fig 9-4 or 9-5)

Section VI. INSTALLATION OF POWER TAKEOFF, SPROCKET ASSEMBLY, HOSES AND BRACKET

9-10. General. This section provides instructions for the installation of the power takeoff, sprocket assembly and bracket.

9-11. Power Takeoff, Sprocket Assembly, and Bracket (Fig 9 -6)

- a. Open the engine exhaust access door and remove exhaust elbows. Refer to TM 9- 2350-215-20 (M60, M60A1), TM 9-2350-257- 20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).
- b. Remove transmission shroud. Refer to TM 9- 2350-215-20 (M60, M60A1), TM 9- 2350-257-20-1 (M60A1 RISE), or TM 9-2350- 253-20-1 (M60A3).
- c. Remove power takeoff access cover TM 9-2520- 223-34.
- d. Install sprocket assembly 7699894 in power takeoff (view A).
- e. Place power takeoff on bench.
- f. Connect hose 8675762 to lower pump port and secure with gasket MS28775- 228, two flanges 7340002, four screws M890728-111, and lockwashers MS35338-48 (view B).

- g. Connect hose 8675761 to upper pump port and secure with gasket MS28775-228, two flanges 7340002, four screws MS90728-111, and lockwashers MS35338-48 (view B).
- h. Install gasket 7383694 and ring assembly 10940666 to power takeoff, and secure with two screws MS90728-35 and lock- washers MS35338-45 (view C).
- i. Install four spacers 7699818 and bracket 10940698 on transmission, and secure with two screws MS90727-114 and lockwasher MS35338-48 (view C).
- j. Install gasket 7699926 on transmission opening (view C).
- k. Using ropes and lifting devices, position power takeoff 10940668 to transmission opening and bracket 10940698 so power takeoff shaft splines are aligned with sprocket assembly splines (view C).
- l. Secure power takeoff 10940668 to transmission opening with five screws MS90727-92, lockwashers MS35338-47, and washer MS27183-16 (view C).
- m. Secure power takeoff 10940668 to bracket with two screws MS90727-115, lock- washers MS35338-48, washers MS27183-18, and nuts MS51968-14 (view C).

REMOVE SHIFTING SECTOR, HOLD
BRACKET ASSY 10887445 IN PLACE

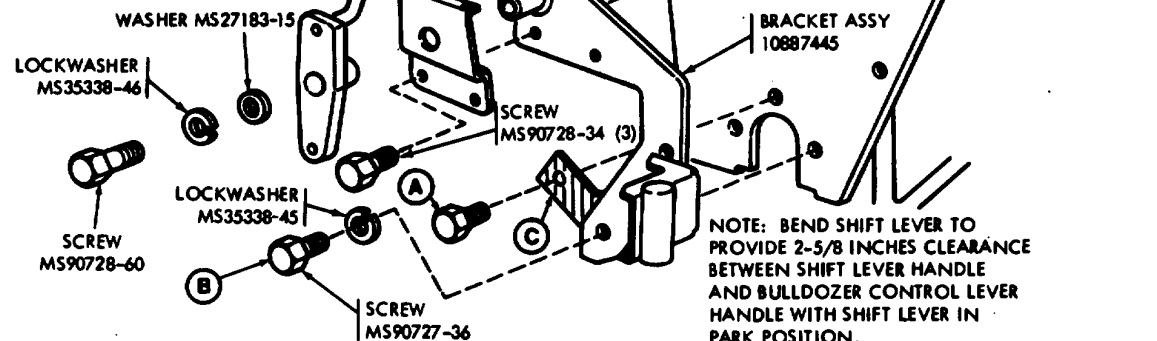
WITH BOLTS (A) AND (B)

USE BRACKET AS TEMPLATE AND
DRILL 3 HOLES 3/8" DIAMETER
INDICATED WITH "X"

CUT ALONG TRIM LINE AND DISCARD

SHADED AREA (C) AFTER HOLES

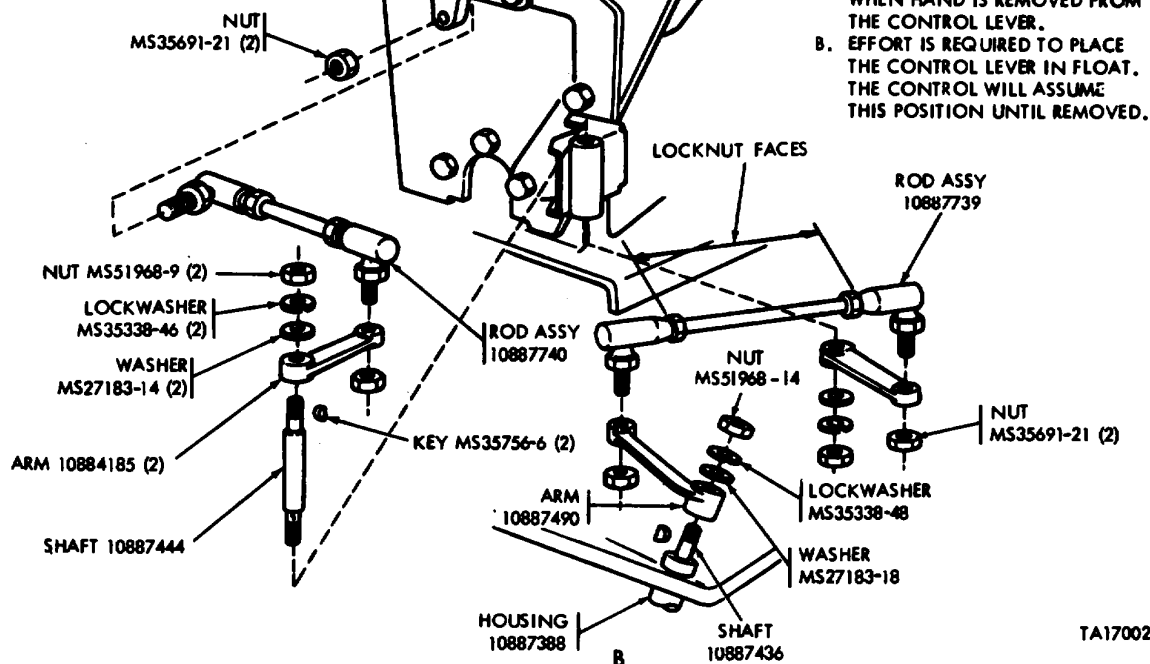
ARE DRILLED



A

THE FOLLOWING DIMENSIONS ARE
FOR REFERENCE ONLY. DIMENSIONS
ARE MEASURED BETWEEN THE LOCK
NUT FACES OF THE JOINTS. PARTS
HAVE BEEN PRE-ASSEMBLED.

ROD ASSY 10887739 6 - 7/16 IN.
ROD ASSY 10887740 3 - 7/16 IN.



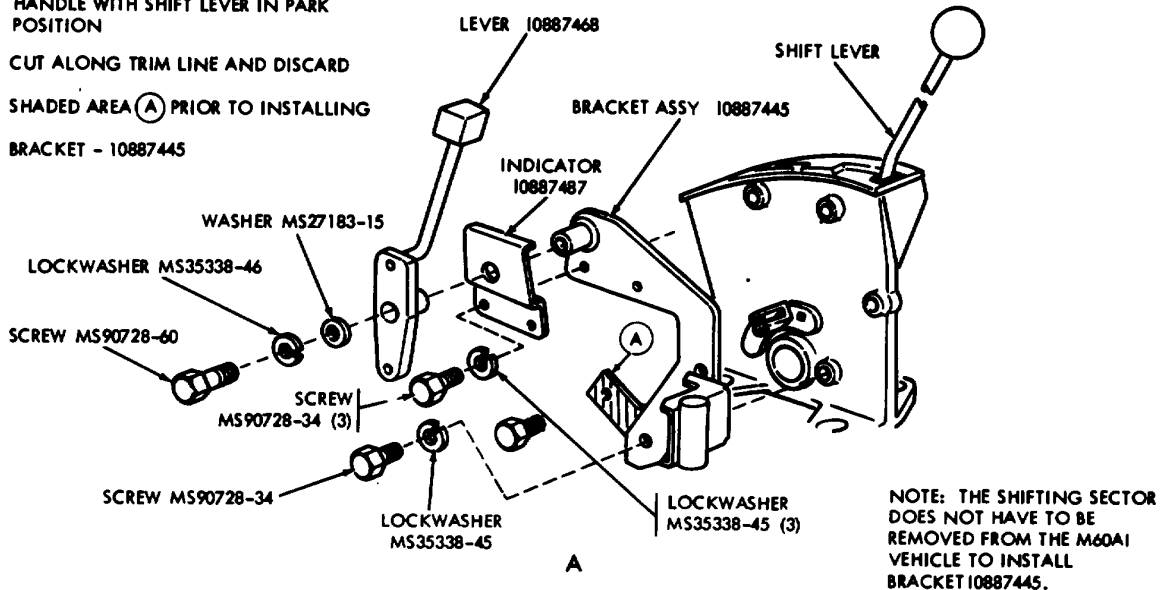
TA170028

Figure 9-4. Installation of blade assembly manual control lever and linkage (M60).

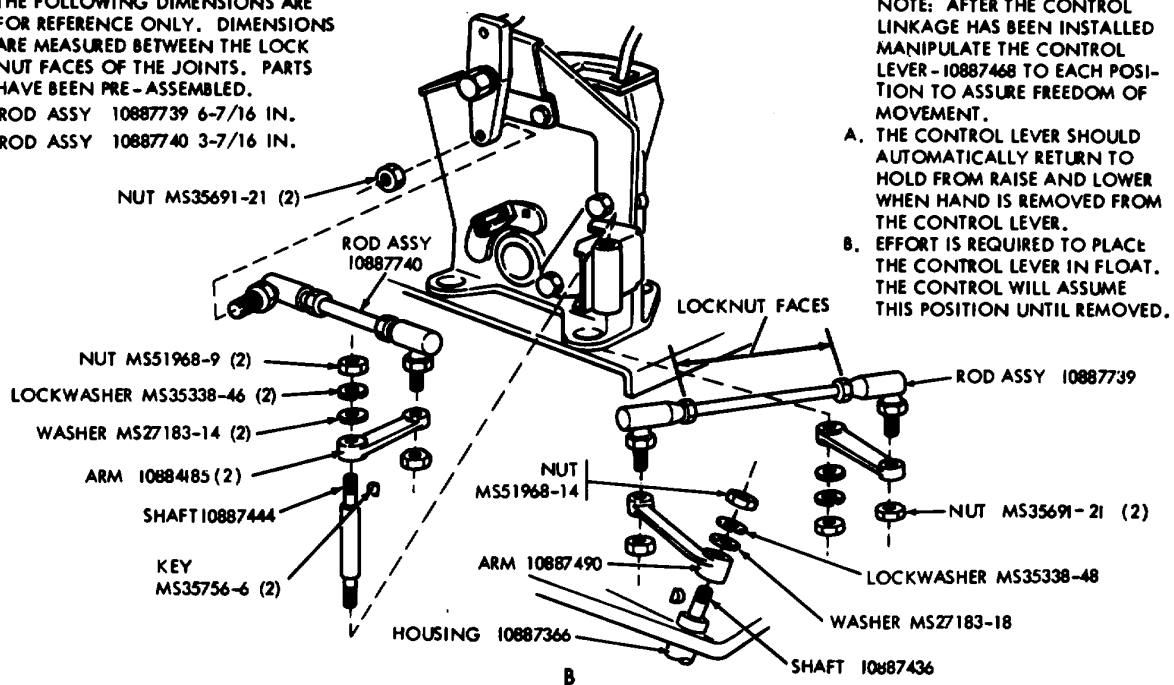
NOTE: BEND SHIFT, LEVER TO PROVIDE 2-5/8 INCHES CLEARANCE BETWEEN SHIFT LEVER HANDLE AND BULLDOZER CONTROL LEVER HANDLE WITH SHIFT LEVER IN PARK POSITION

CUT ALONG TRIM LINE AND DISCARD SHADED AREA (A) PRIOR TO INSTALLING

BRACKET - 10887445

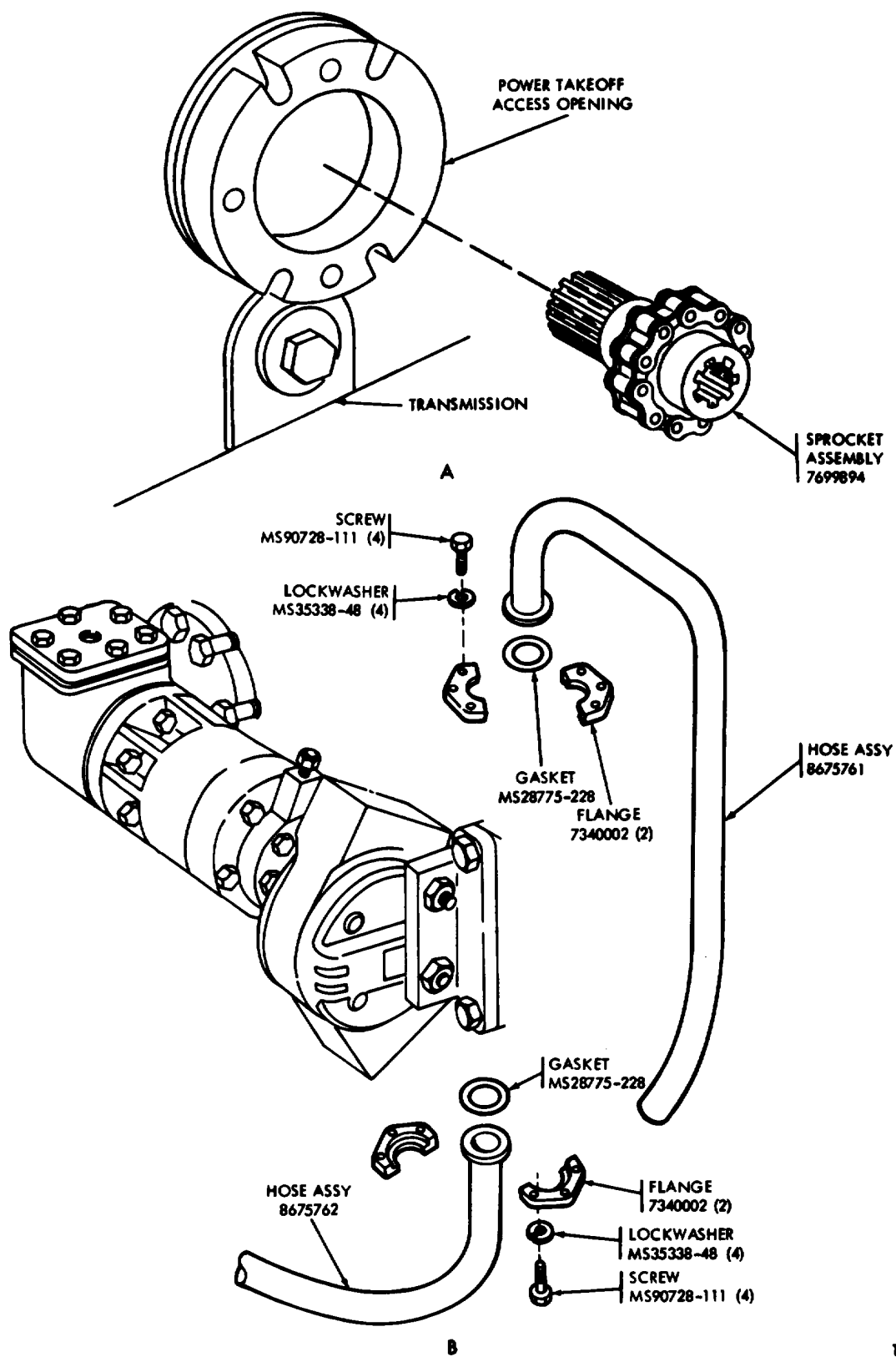


THE FOLLOWING DIMENSIONS ARE FOR REFERENCE ONLY. DIMENSIONS ARE MEASURED BETWEEN THE LOCK NUT FACES OF THE JOINTS. PARTS HAVE BEEN PRE-ASSEMBLED.
ROD ASSY 10887739 6-7/16 IN.
ROD ASSY 10887740 3-7/16 IN.



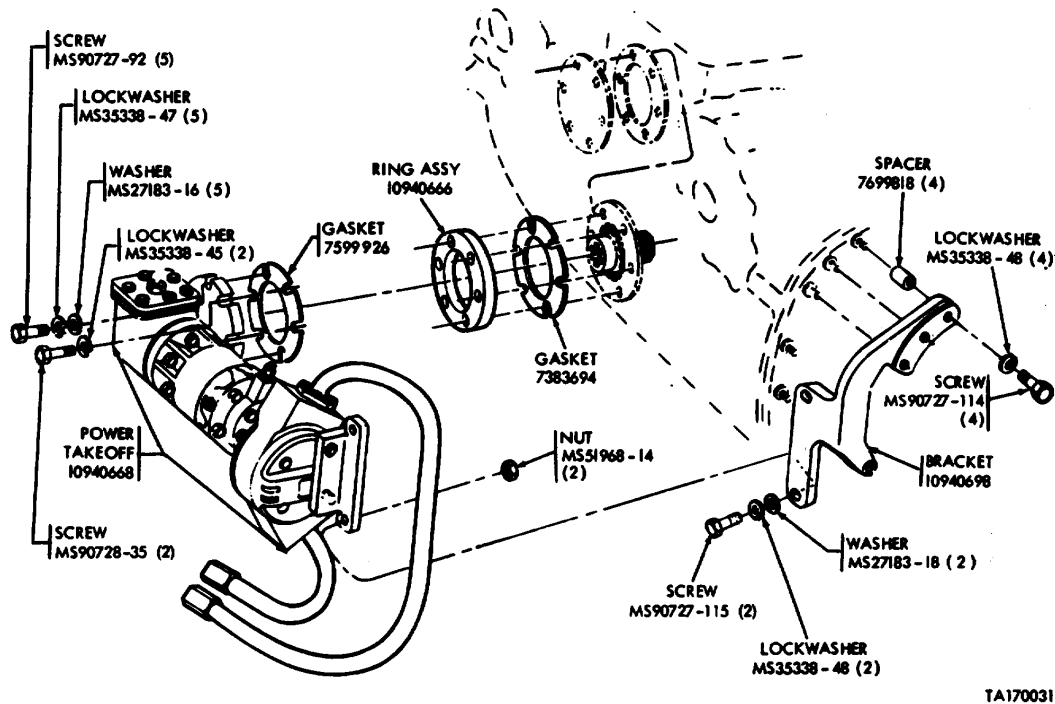
TA170029

Figure 9-5. Installation of blade assembly manual control lever and linkage (M60A1, M60A1 RISE, or M60A3).



TA170030

Figure 9-6. Installation of power takeoff, sprocket assembly, hoses, and bracket (sheet 1 of 2).



TA170031

Figure 9-6. installation of power takeoff, sprocket assembly, hoses, and bracket (sheet 2 of 2).

Section VII. INSTALLATION OF RESERVOIR AND TUBING

9-12. General. This section provides instructions for installation of the reservoir and tubing at the rear of hull, elbows, reservoir, hoses, connections, and guards.

9-13. Tubing and Hose Assemblies (Fig 9-7).

a. Do not secure or tighten any component of the installation until all components are installed or unless otherwise indicated.

secured so that effort is required to move or rotate the tubing. This insures that the tube connections will not be displaced after completing the assembly.

CAUTION

CAUTION

During installation of brackets and tubes, the bracket should be

Take care that hydraulic tubes and lines are kept clean and that no foreign material is allowed to enter.

b. Do not weld slip joints until hose connections have been secured and all brackets and flanges are properly assembled

and tightened. Weld in accordance with TM 9-237.

9-14. Access Plate and Elbows (Fig 9-5).

- a. Remove two screws and lockwashers from all left torsion bar housings (view A).
- b. Install tube mounting brackets (5 places) on left torsion bar housing and hold in place with two screws and lockwashers (view A).

NOTE

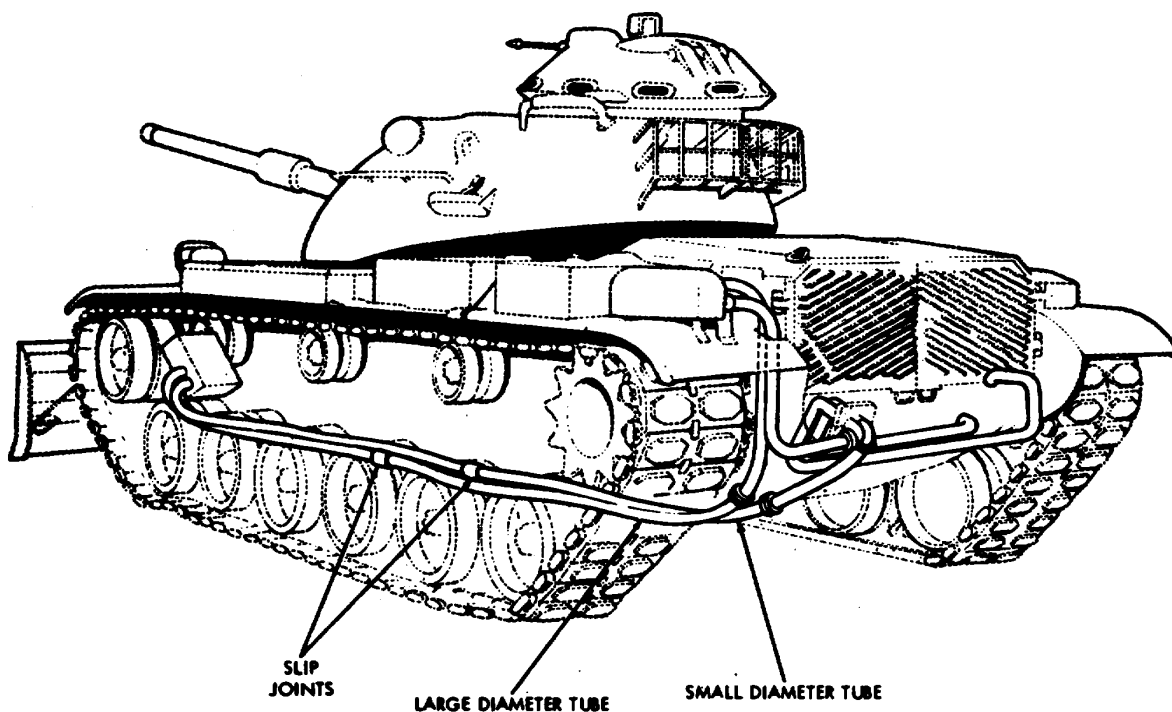
Tighten screws on brackets after tube connections have been properly made.

- c. Position large and small tubes at rear of tank and install brackets (5 places). Hold each bracket in place with two screws and lockwashers (view B).

- d. Remove left brake access plate and stow in removed stowage box.

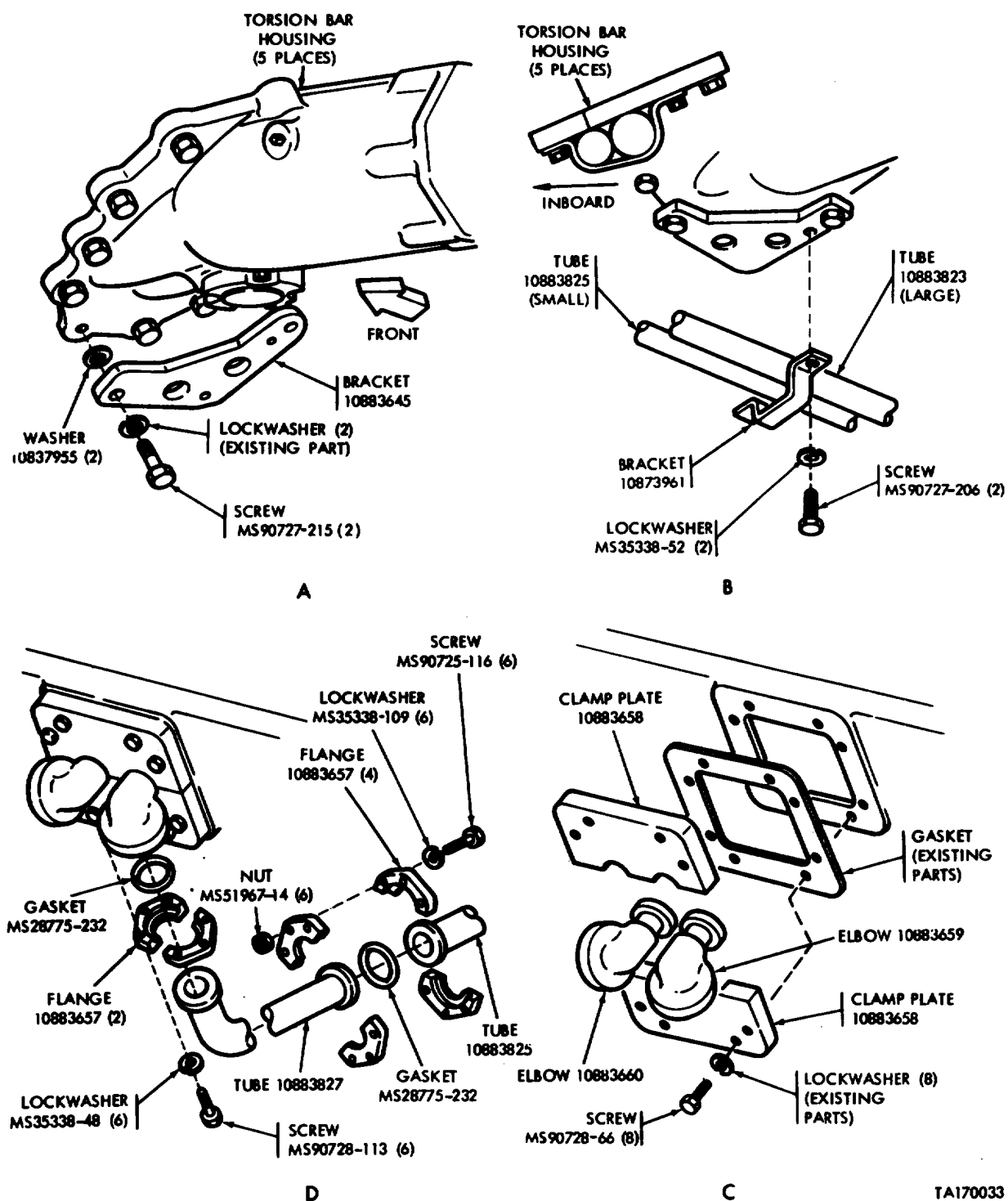
- e. Install two clamp plates, elbows, and existing gaskets to hull and hold in place with eight screws and existing lockwashers (view C.)

- f. Install pressure tube to elbow using flanges and gasket. Hold tube and elbow in place with six screws and lockwashers (view D).



TA170032

Figure 9-7. Tubing and hoses-installed view.



TA170033

Figure 9-8. Installation of plates and elbows.

9-15. Installation of Armor Tubes and Reservoir (Fig 9-9).

a. Install armor tubes using flanges and gaskets to elbow in clamp plates and to tube. Hold tubes and flanges in place with screws, lockwashers, and nuts (view A).

b. Install reservoir on left rear fender plate and hold front side of reservoir in place with two bolts, lockwashers, washers, and nuts (view B).

c. install two bolts in fender plate and hold rear side of reservoir in place (view B).

9-16. Reservoir Hoses and Guards (Fig 9-10).

a. Install two adapters in reservoir and attach two hoses to adapters (view A).

b. Slip hanger over tube and secure two seal assemblies and elbows to tubes (view B).

c. Install tube assemblies to hoses (view C).

d. Assemble bracket to guard before installing guard and secure with screw and lockwasher (view D).

e. Position guard on fender and mark three holes. Remove guard and drill three holes 9/16-inch diameter (view D).

f. Install guard below hose assemblies and secure with three screws, lockwashers, and nuts (view D).

g. Install guard and secure to two reservoir mounting bolts with two nuts, lock- washers, and washers (view E).

h. Install hose upper guard and secure with five screws and lockwashers (view F).

9-17. Securing Components after Installation of Reservoir, Guards, and Tubing (Fig 9-11).

a. Install bracket with two U-bolts, spacers, washers, lockwashers, and nuts (view A).

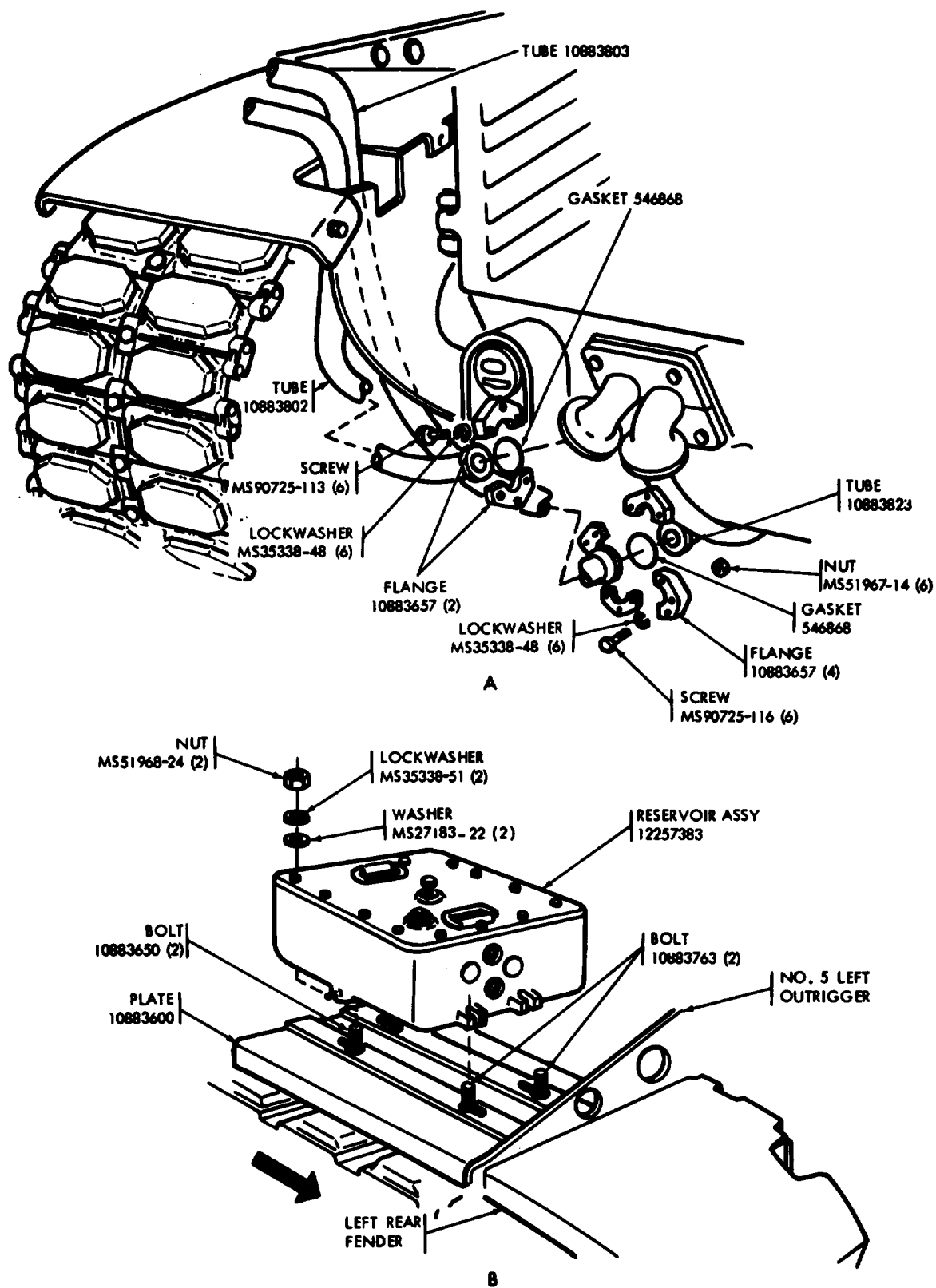
b. Secure components in order listed (view A):

- (1) Point A - two clamps
- (2) Point B - elbow to tube
- (3) Point C - U-bolt to bracket
- (4) Point D - three guards
- (5) Point E - reservoir assembly
- (6) Point F - bracket

c. Weld bracket 2 inches below rear grille door hinge (view A).

d. Drill two 1/2-inch holes for hanger (view B).

e. Secure brackets, plates, and hanger (view B).



TA170034

Figure 9-9. Installation of armor tubes and reservoir.

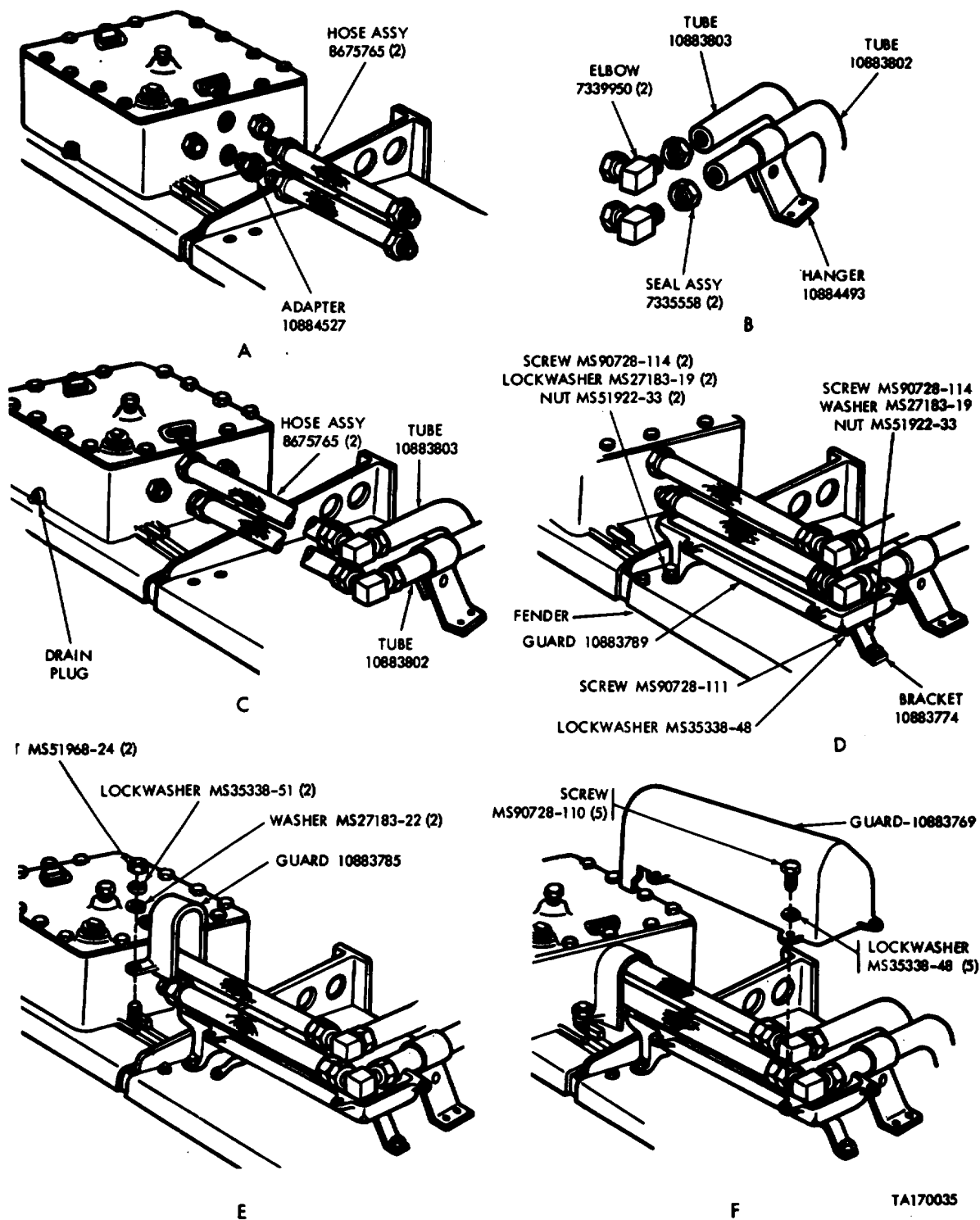


Figure 9-10. Installation of reservoir hoses and guards.

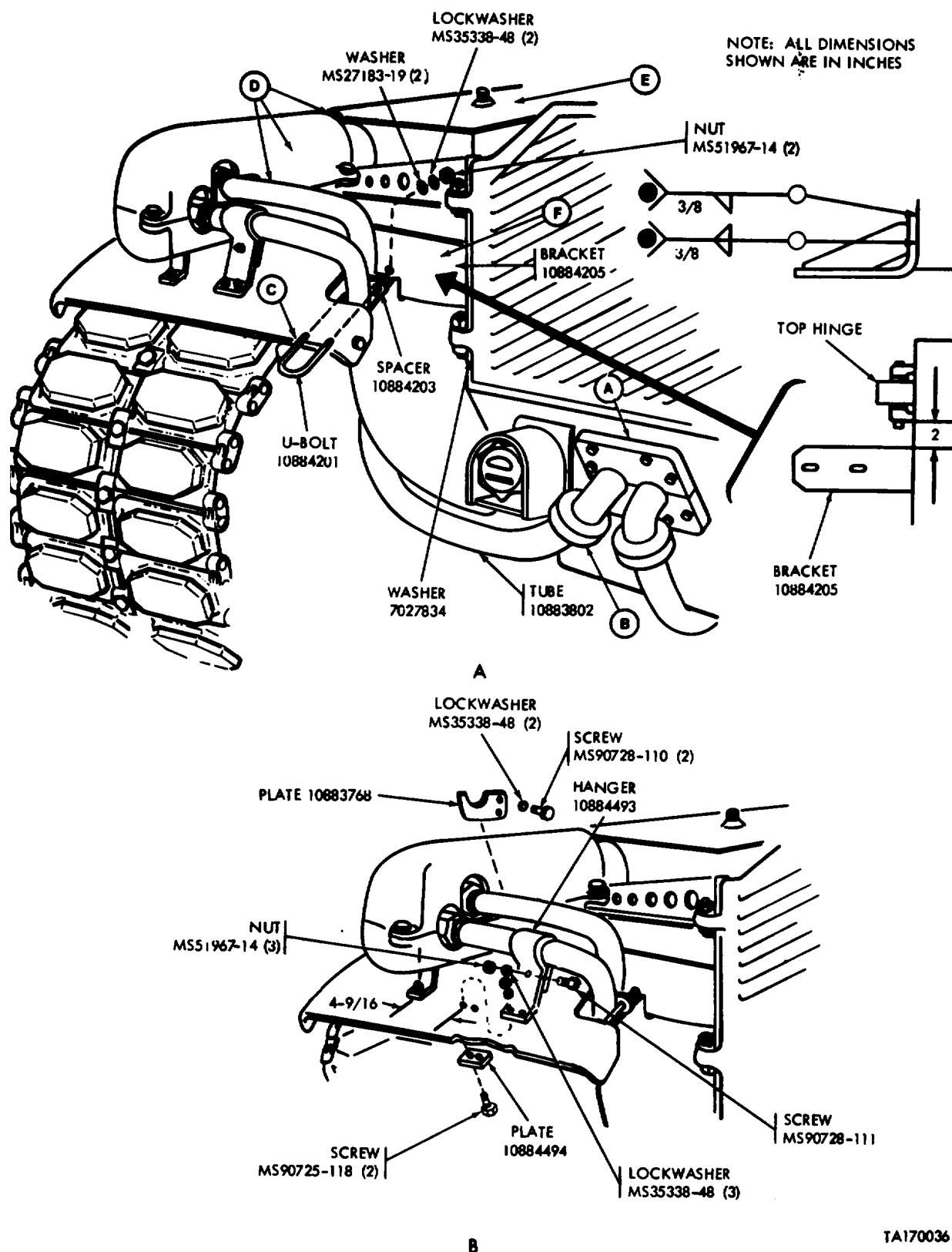


Figure 9-11. Securing components after installation of reservoir, guards, and tubing.

Section VIII. INSTALLATION OF MANFOLD TUBES AND GAURDS

9-18. General. This section provided instructions for the installation of tubes and hoses to control valve manifold and guards. Leave all protective caps and covers on manifold tubes until tubes are ready for installation.

9-19. Hose Assemblies from Power Takeoff Pump to Elbow (Fig 9-12).

- a. Install hose, gasket, and two flanges, and secure with four screws and lockwashers (view A).
- b. Install hose, gasket, and two flanges, and secure with four screws and lockwashers (view B).
- c. Tighten pump flange screws. Refer to figure 9-6, view B.

9-20. Tubes and Hoses to Manifold Valve (Fig 9-13).

CAUTION

Before installing manifold tubes, remove protective covers and check inside of all tube assemblies for dirt or other contamination. Dirt or other foreign material will cause damage to the hydraulic system.

- a. Install large and small tubes to hull and tighten screws (view A).

- b. Install two hose and seal assemblies to swivel assembly and union on manifold assembly (view B).
- c. Slide tubes into slip joints and take up slack in front hoses.
- d. Weld tubes at slip joints (view C).

NOTE

Tack weld tubes in position on vehicle and lower tubes to make complete weld. Replace tube in original position.

- e. Install drain plugs in slip joints (view C).

9-21. Alteration and Installation of Blocks (Fig 9-14).

- a. Alter blocks prior to installation (view A).
- b. Install' two blocks on hull and weld into position (view B).
- c. Install tube assemblies to blocks and secure two support tubes. Secure support tubes to blocks with four screws, lockwashers, and washers (view B).

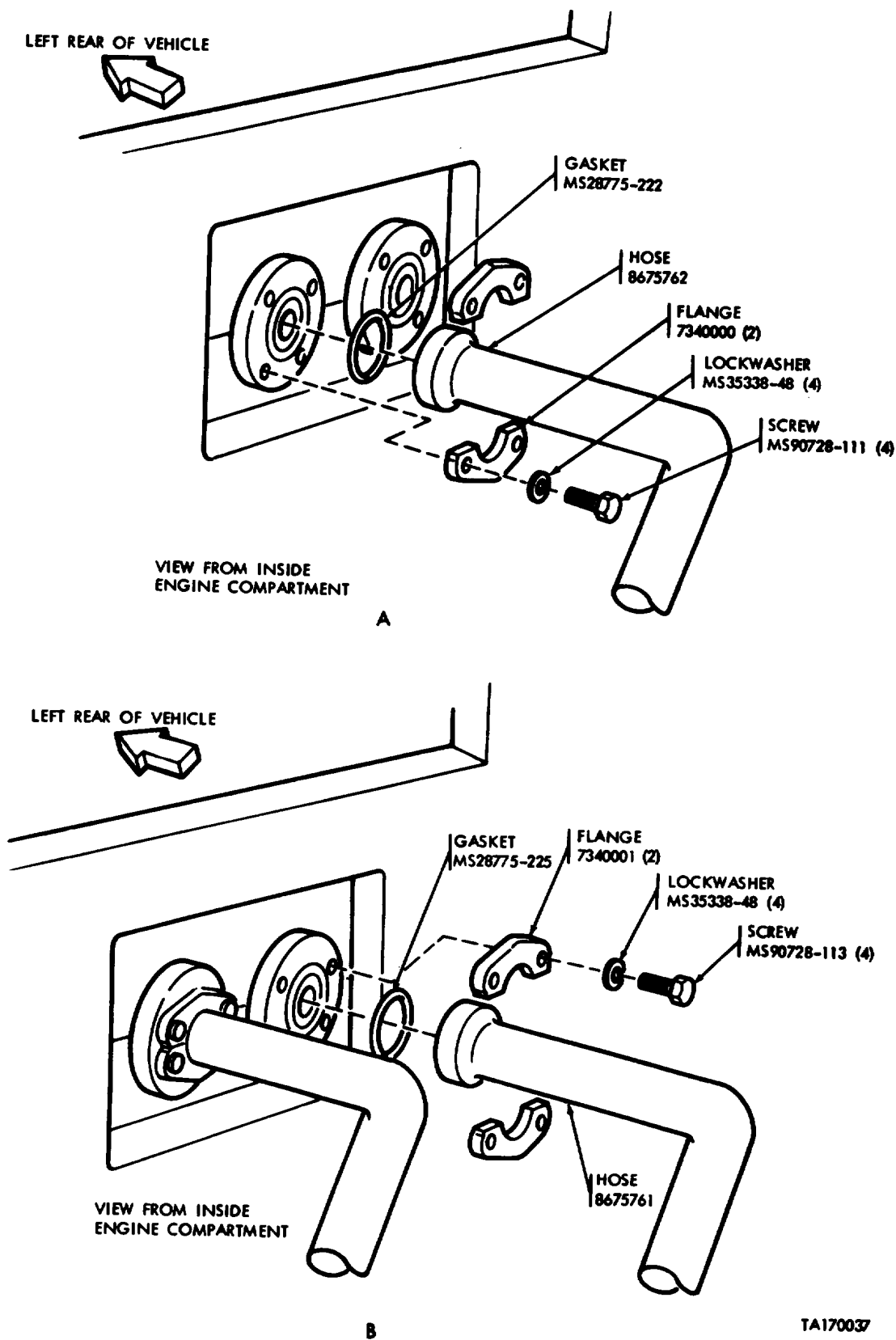
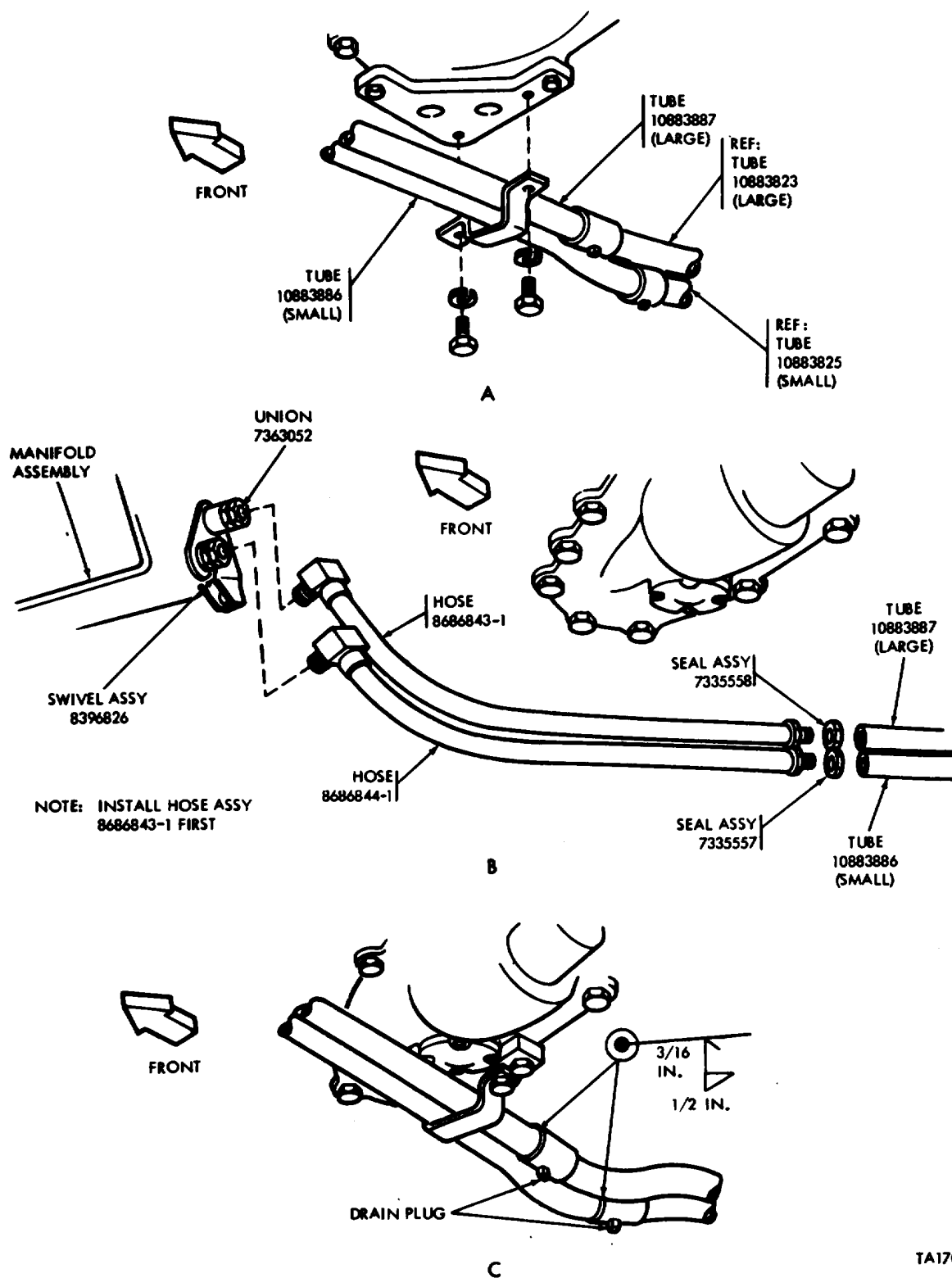
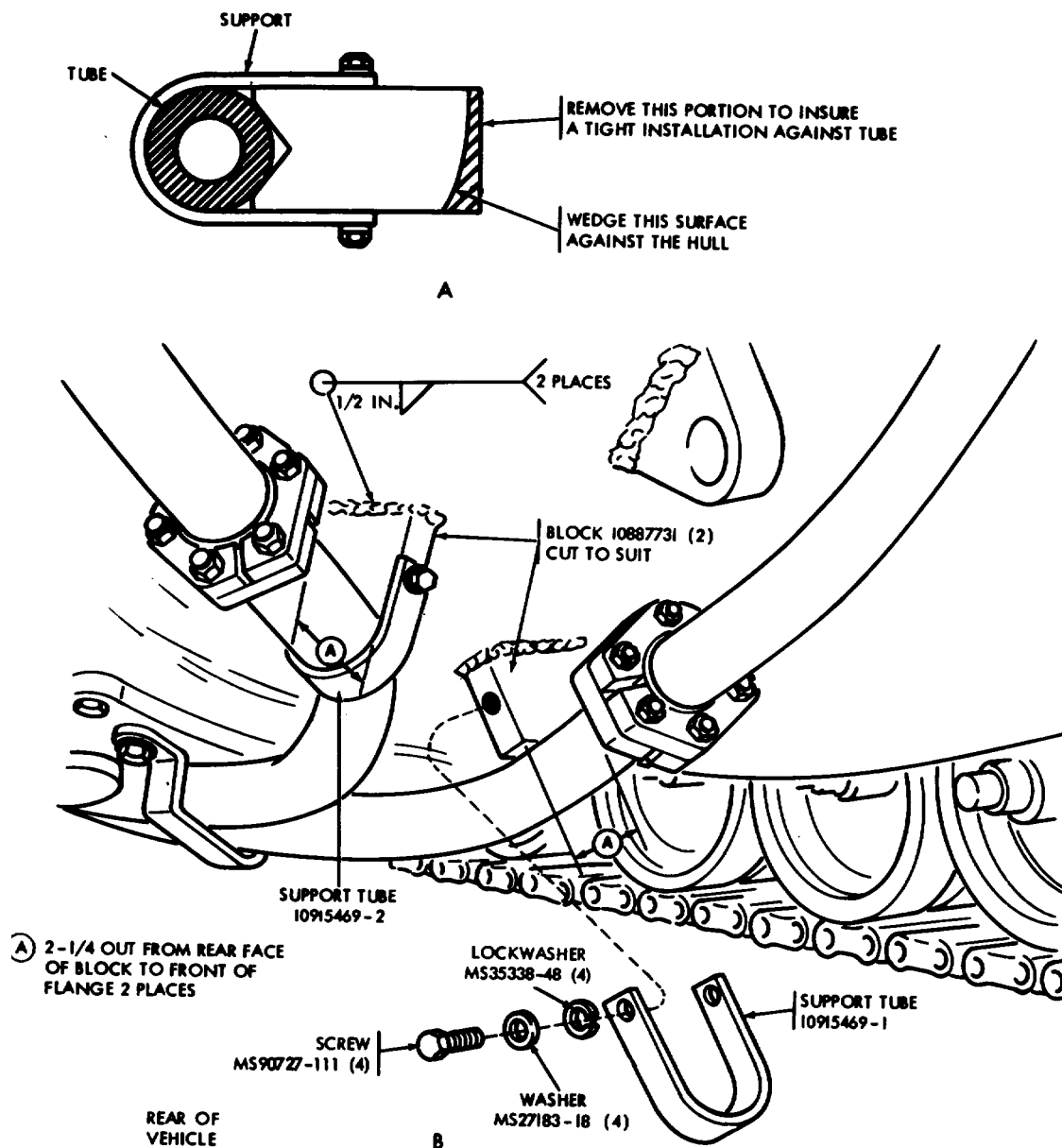


Figure 9-12. Installation of manifold tubes and guards.



TA170038

Figure 9-13. Installation of tubes and hoses to manifold valve.



TA170039

Figure 9-14. Alteration and installation of blocks.

Section IX. INSTALLATION OF MOUNTING BRACKETS, CYLINDERS, AND GUARDS

9-22. General This section provides instructions for the installation of the two mounting brackets, cylinders, and guards.

CAUTION

Be sure to use a proper lifting device when installing parts.

9-23. Front Mounting Brackets (Fig 9-15).

- a. Remove three set screws and nuts from bracket (view A).
- b. Install eye assembly to mounting bracket with bolt (view B).
- c. Prior to installing mounting bracket, remove plug from mounting lugs on vehicle (view B).
- d. Coat pin with film of oil and insert into lug for test fit (view B).
- e. Install front mounting bracket with pin, screws, and lockwashers (view B).
- f. Place a string across each mounting bracket on either of the trunnion surfaces marked "X" to check squareness. Adjust setscrews so that equal clearance can be measured between the mounting bracket and hull; secure setscrews with nut (view A).
- g. Remove lifting eye and install set- screw and nut (view A).

9-24. Cylinder and Ram Assemblies (Fig 9-16).

- a. Install hoses and connections to cylinder (view A).
- b. Extend piston rod full stroke prior to installing hoses to manifold (view B).
- c. Install cylinder to mounting bracket with caps, bolts, and lockwashers (view B).
- d. Pivot cylinders back and forth. Adjust connections to the lower cylinder port to obtain the greatest amount of travel (view A).

- e. Install hoses from cylinder to manifold (view C).

9-25. Cylinder Hose Guards (Fig 9-17).

- a. Install hose guard to mounting bracket and manifold (view A).
- b. Install two guard assemblies and weld bosses (view B).
- c. Install guard assembly and weld bosses (view C).

9-26. Cylinder Guards (Fig 9-18).

- a. Install front guard to cylinder with screws, washers, and lockwashers (view B).
- b. Position rear guard over cylinder and ram assembly, and install four screws, lockwashers, washers, and lugs; hold guards in position (view A).
- c. Install front guard as high as possible within limits of slotted holes. Secure guard with four screws, lockwashers, and washers (view B).
- d. Install adjusting screws to position rear guard for tack welding lugs (view C). Adjust screws to center rear guard (view C).
- e. Install rear guard to mounting bracket (view C) by tack welding the four lugs with rear guard as close to the hull as possible.
- f. Loosen adjusting screws and shake cylinder to check for clearance between guards, cylinders and rear guard. Remove front guard and complete welding three sides of each lug (view C).
- g. Remove adjusting screws from guard and return to spares.
- h. Install guards and secure with attaching hardware (view B).

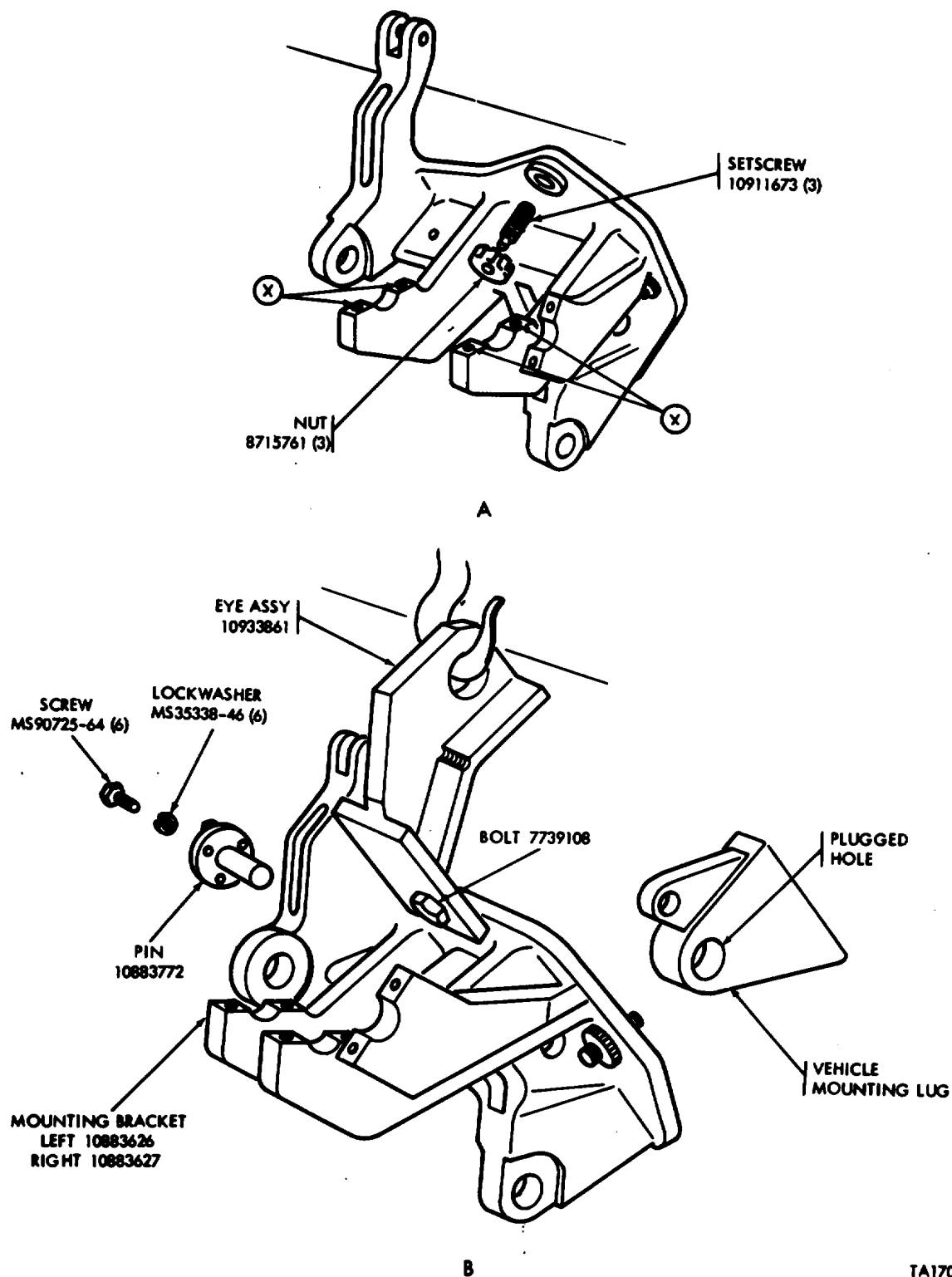
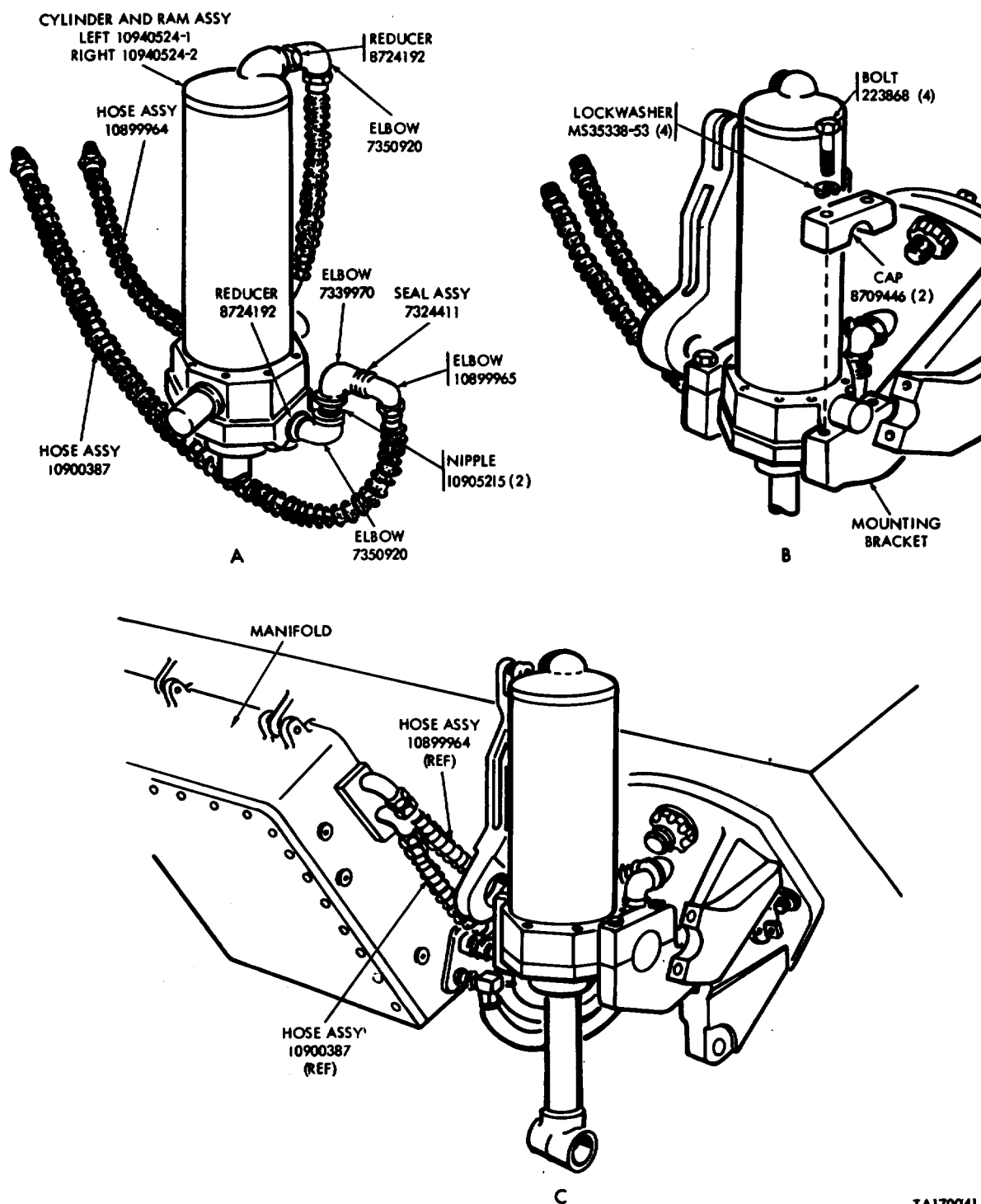
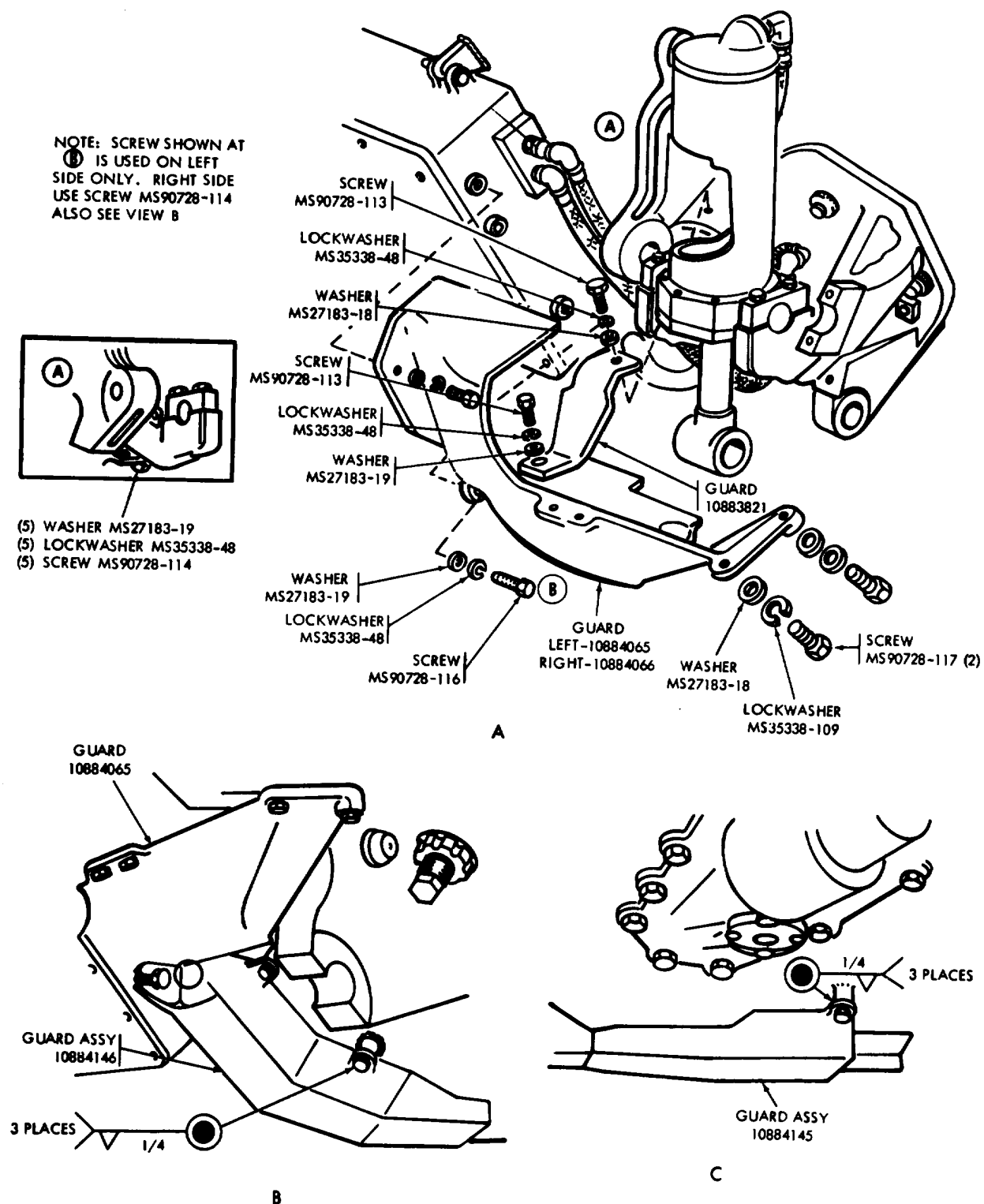


Figure 9-15. Installation of mounting brackets.



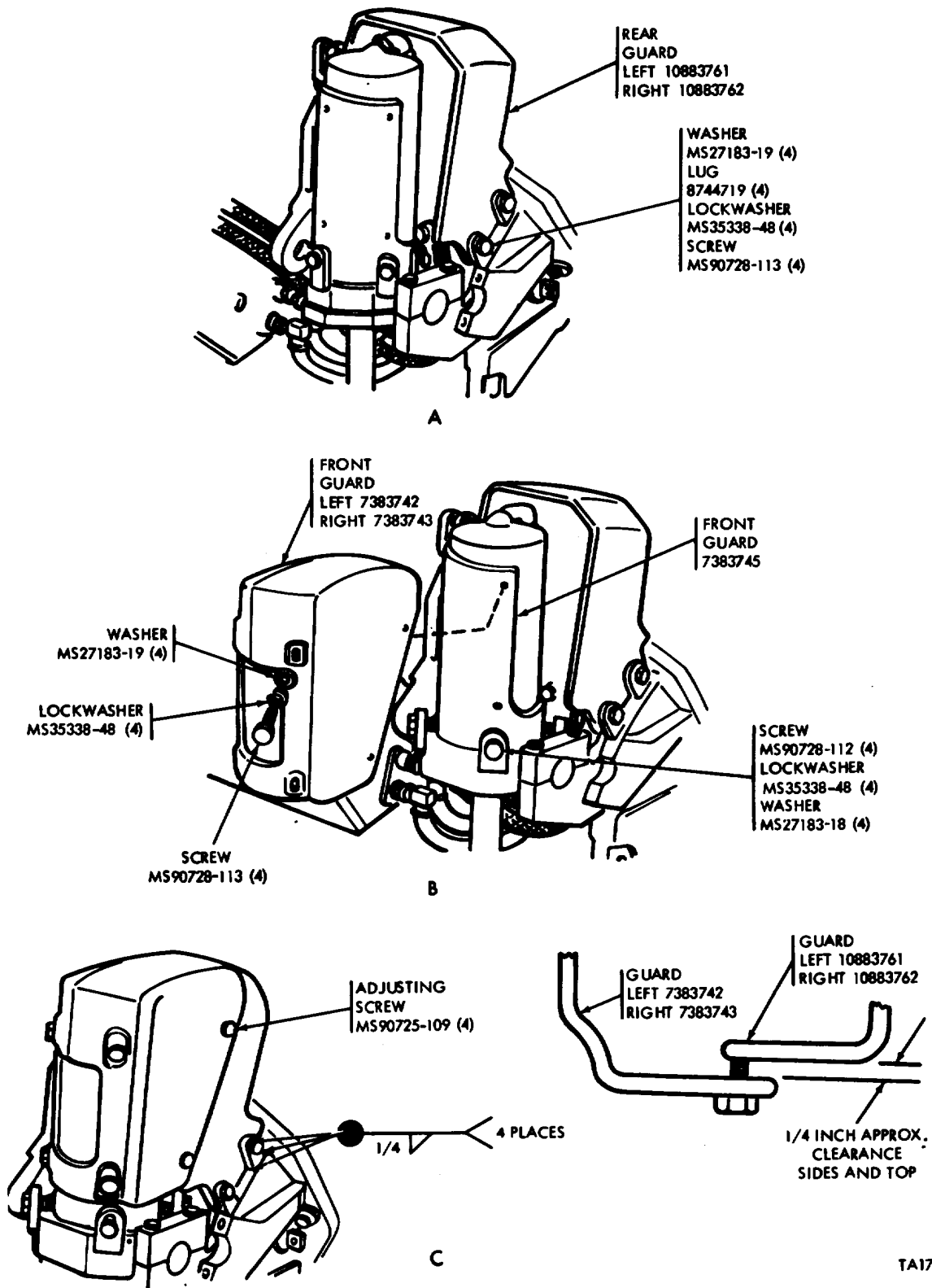
TA170041

Figure 9-16. Installation of cylinder and ram assemblies.



TA170042

Figure 9-17. Installation of cylinder hoses and guards.



TA170043

Figure 9-18. Installation of cylinder and guards.

Section X. INSTALLATION OF BLADE ASSEMBLY

9-27. General. This section provides instructions for the installation of blade assembly.

9-28. Blade Assembly (Fig 9-19).

a. Place blade assembly face down. Install pushbeams to blade assembly and position pushbeams toward tank (view A).

b. Use hydraulic system to position ram (view B).

c. Install pushbeam assembly to mounting bracket, and secure with pin, lock, screw, and lockwasher (view B).

d. Align cylinder ram with pushbeam, and secure with pin, lock, screw and lock- washer (view C).

Section XI. INSTALLATION OF CARRYING HOOKS

9-29. General. This section provides instructions for the installation of the carrying hooks.

NOTE

Install carrying hooks prior to cylinder guard installation.

9-30. Carrying Hooks (Fig 9-20).

a. Insert shaft through mounting bracket (view B).

b. Install arm on shaft, between mounting brackets, and secure with screw, lockwasher, and key (view A).

e. Install inner tilt arm to blade assembly, and secure with pin, lock, screw, and lockwasher (view F).

f. Raise blade assembly to vertical position (view D).

g. Install outer tilt arm to blade assembly, and secure with pin, lock, screw, and lockwasher (view E).

h. Install outer tilt arm to mounting bracket and secure with cap, two bolts, and lockwashers (view E).

i. Install inner tilt arm to mounting bracket, and secure with pin, lock, screw, and lockwasher (view F).

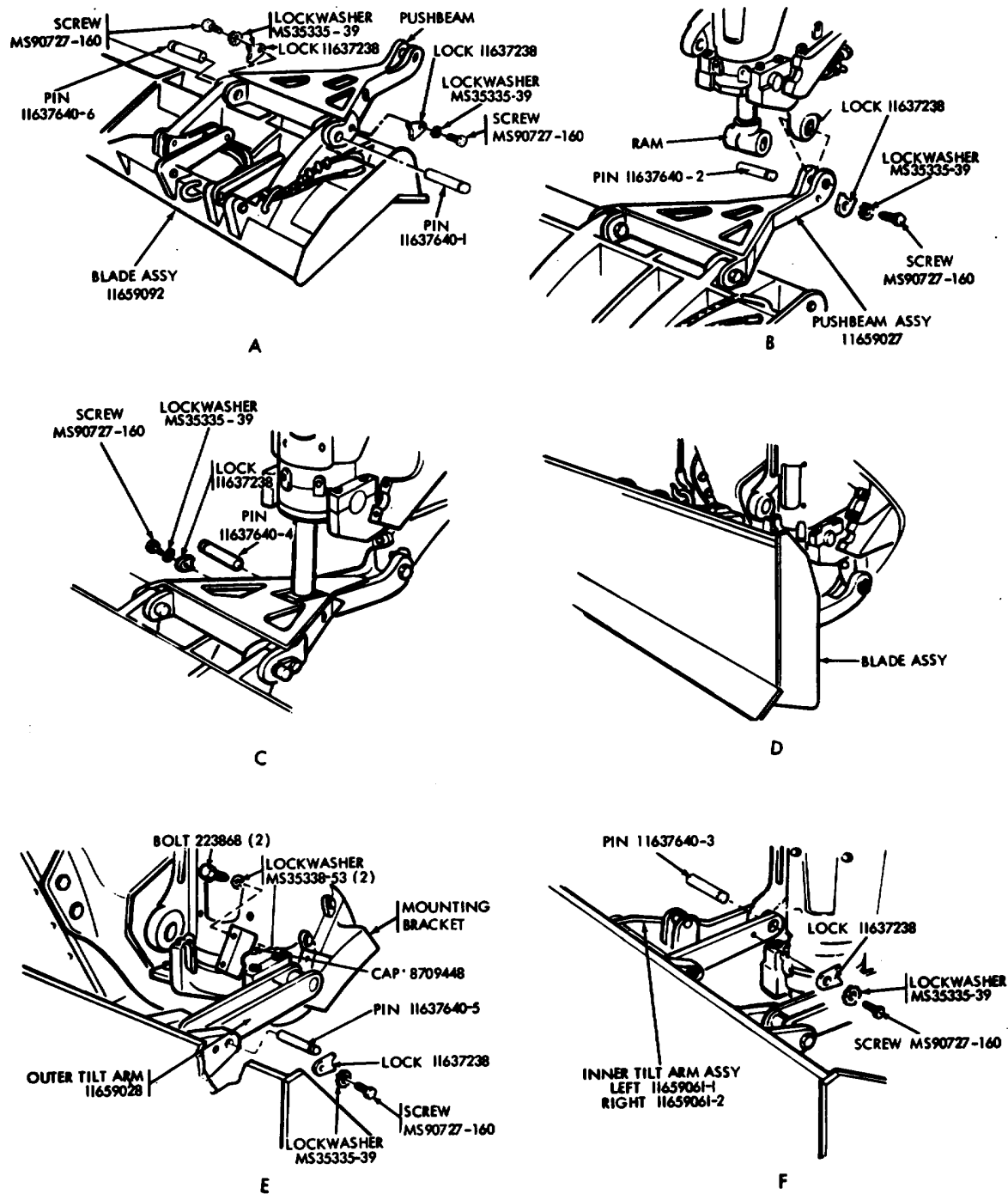
c. Install carrying hook in other mounting bracket, and secure with shaft, setscrew, and nut (view B).

d. Secure carrying hook in first mounting bracket with setscrew and nut (view C).

e. Engage blade assembly with carrying hooks (view D).

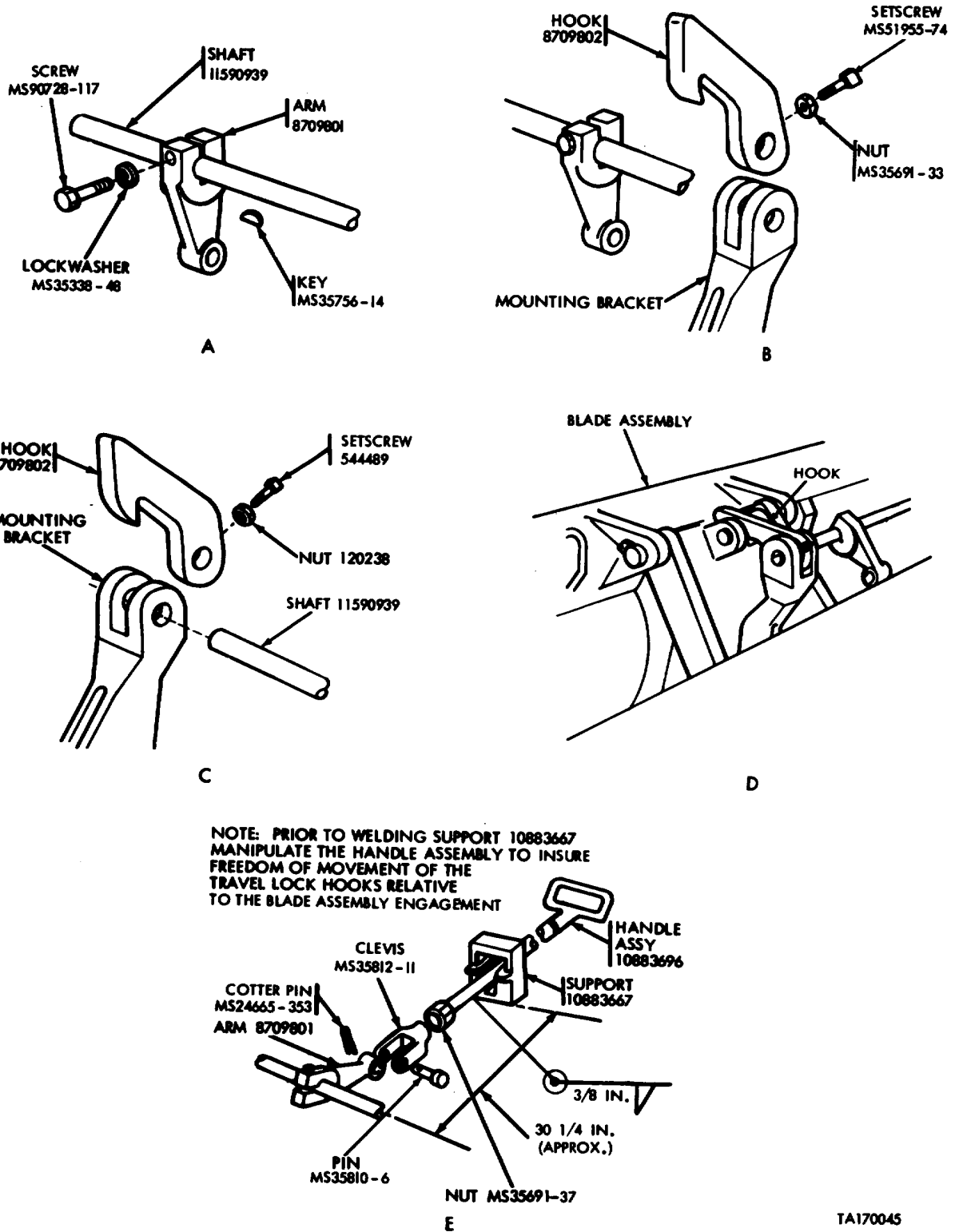
f. Prior to welding support, manipulate handle assembly to insure freedom of movement of travel lock hooks relative to blade assembly engagement (view E).

g. Install handle and support assembly, and secure to arm with clevis, pin, and cotter pin. Weld support (view E).



TA170044

Figure 9-19. Installation of blade assembly.



TA170045

Figure 9-20. Installation of carrying hooks.
9-28

Section XII. INSTALLATION OF HEADLAMPS AND GUARDS

9-31. General. This section provides instructions for the installation of the headlamps and guards.

9-32. Headlamps and Guards (Fig 9-21).

NOTE

Procedure for left side and right side are the same.

a. Install two supports and secure with four screws and washers.

b. Install headlamp guard on supports and secure with two bolts, lockwashers, nuts, washers, and cotter pins.

c. Install adapter and existing head-lamp assembly.

Section XIII. INSTALLATION OF ELECTRICAL SYSTEMS

9-33. General. This section provides instructions for the installation of the electrical wiring harnesses and electrical switch, indicator, and circuit breaker for the M60, M60A1, M80A1 RISE, and M60A3 tanks.

9-34. Switch, Indicator, and Circuit Breaker (Figs 9-22 or 9-23).

a. Be sure pump switch bracket is trimmed to fit mounting position (M60 only) (para 8-11).

b. Position bracket in mounting location and secure with two screws, washers, and nuts (M60) or four screws and lockwashers (M60A1, M60A1 RISE, and M60A3).

c. Install switch to rear of bracket and secure with two screws and lockwashers.

d. Remove lens cap from indicator. Install indicator to rear of bracket, and secure with two screws and lockwashers; then install lens cap to indicator.

e. Install circuit breaker to rear of bracket, and secure with two screws, nuts, and lockwashers.

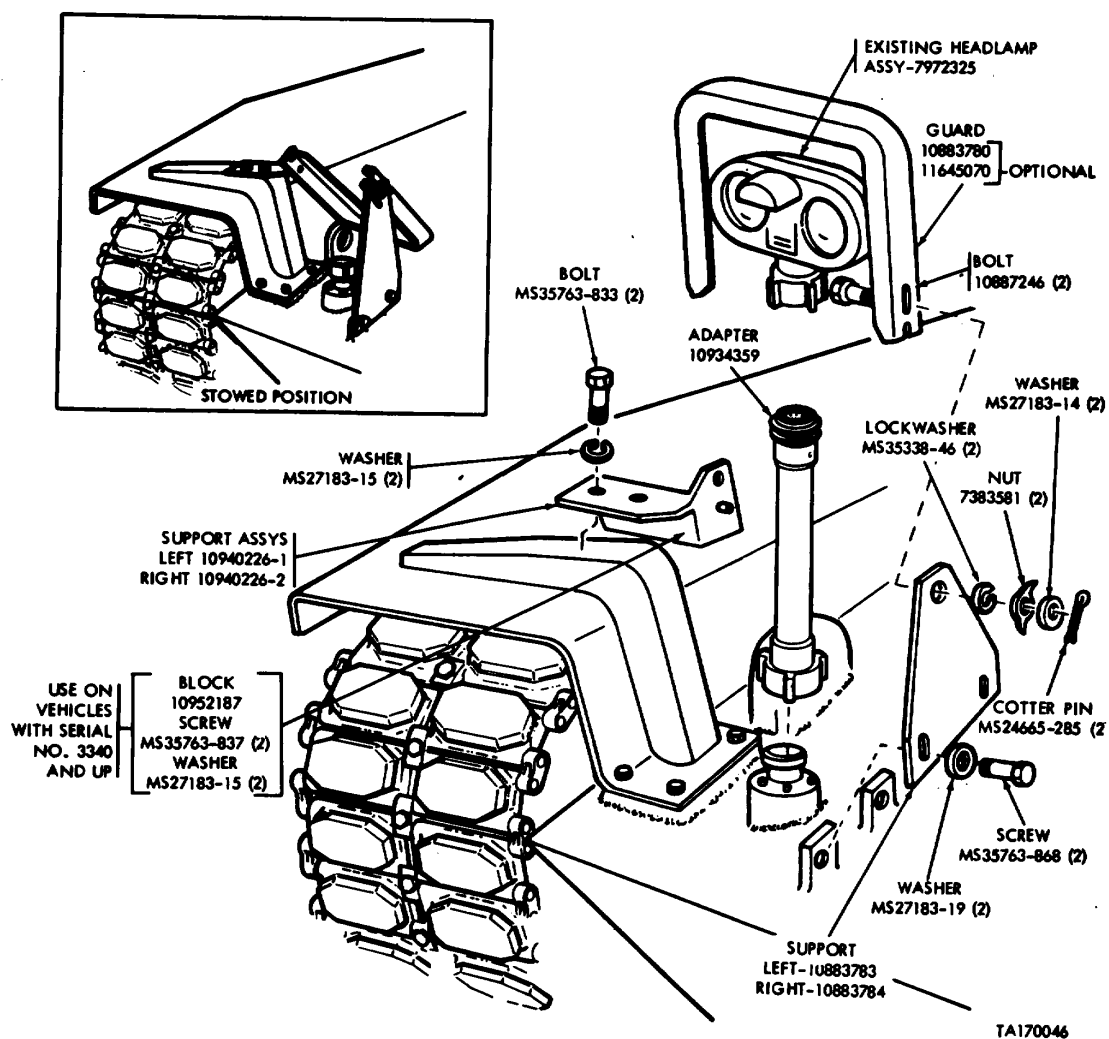


Figure 9-21. Installation of headlamps and guards.

9-35. Electrical Wiring Harnesses (Figs 4-31 and 9-22 or 9-23).

- a. Remove shell and plug from end of wiring harness assembly (lead 920-M60, M60A1 or lead 37-M60A1 RISE and M60A3) and insert into connector assembly.
- b. Install connector assembly to wiring harness.
- c. Install lead assembly from connector assembly to circuit breaker.
- d. Install lead assembly between circuit breaker and switch assembly.

e. Install electrical wiring harness connector to switch assembly.

f. Install electrical wiring harness connector to indicator.

g. Position electrical wiring harness along hull floor, and secure with existing clamps.

h. Connect wiring harness to bulkhead connector pin E.

i. In engine compartment remove and discard shell and plug, and connect electrical wiring harness circuit number 415E

j. Connect the other end of wiring harness circuit number 415E to magnetic clutch.

Section XIV. HYDRAULIC SYSTEM CHECKOUT PROCEDURES

9-36. General. This section provides instructions for hydraulic system checkout procedures.

9-37. Right-Angle Drive Assembly. Remove fitting from top and drain plug from left side of right-angle drive assembly. Pour oil into top of right-angle assembly; when oil overflows from side port, stop pouring and install plug and fitting.

9-38. Hydraulic System (Fig 9-24).

a. The complete hydraulic system, when filled, contains approximately 25 gallons of oil (refer to fig 3-1).

b. To fill the complete system remove oil reservoir filler plug, start the engine, operate at idle speed, and engage the magnetic clutch. Pour a continuous supply of oil into reservoir.

c. Stop engine or switch magnetic clutch off with the blade assembly retained in travel lock position. Check dipstick for required oil level.

(1) Vehicle Engine Off.

(a) Remove drain plug from reservoir and drain oil.

(b) Remove drain plugs from each armor tube slip joint and drain oil.

(2) Vehicle Engine On Low RPM.

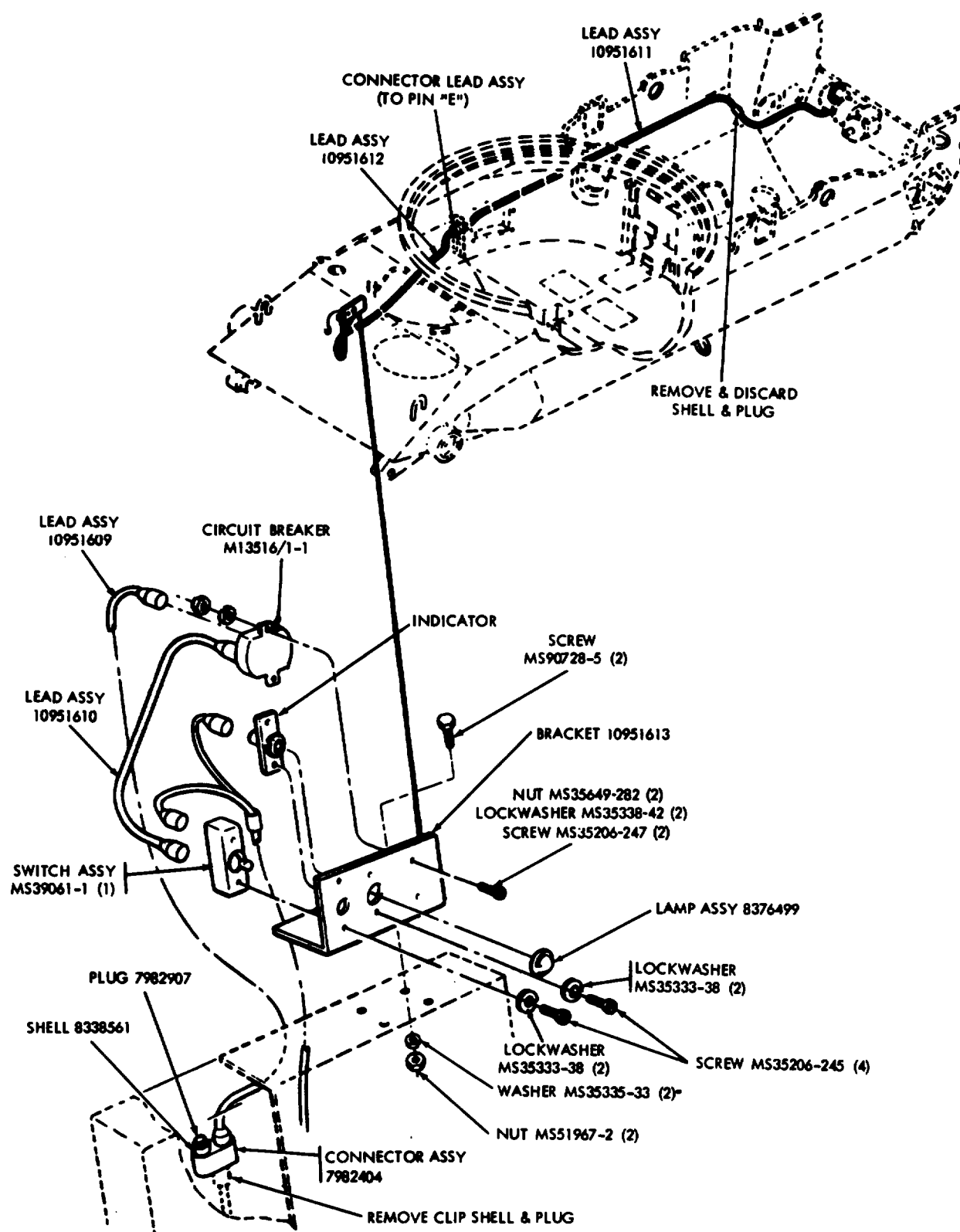
(a) Switch HYDRAULIC PUMP to ON to circulate excess oil past hydraulic pump inlet.

CAUTION

Excessive running of the pump without sufficient oil in the system will cause pump to overheat.

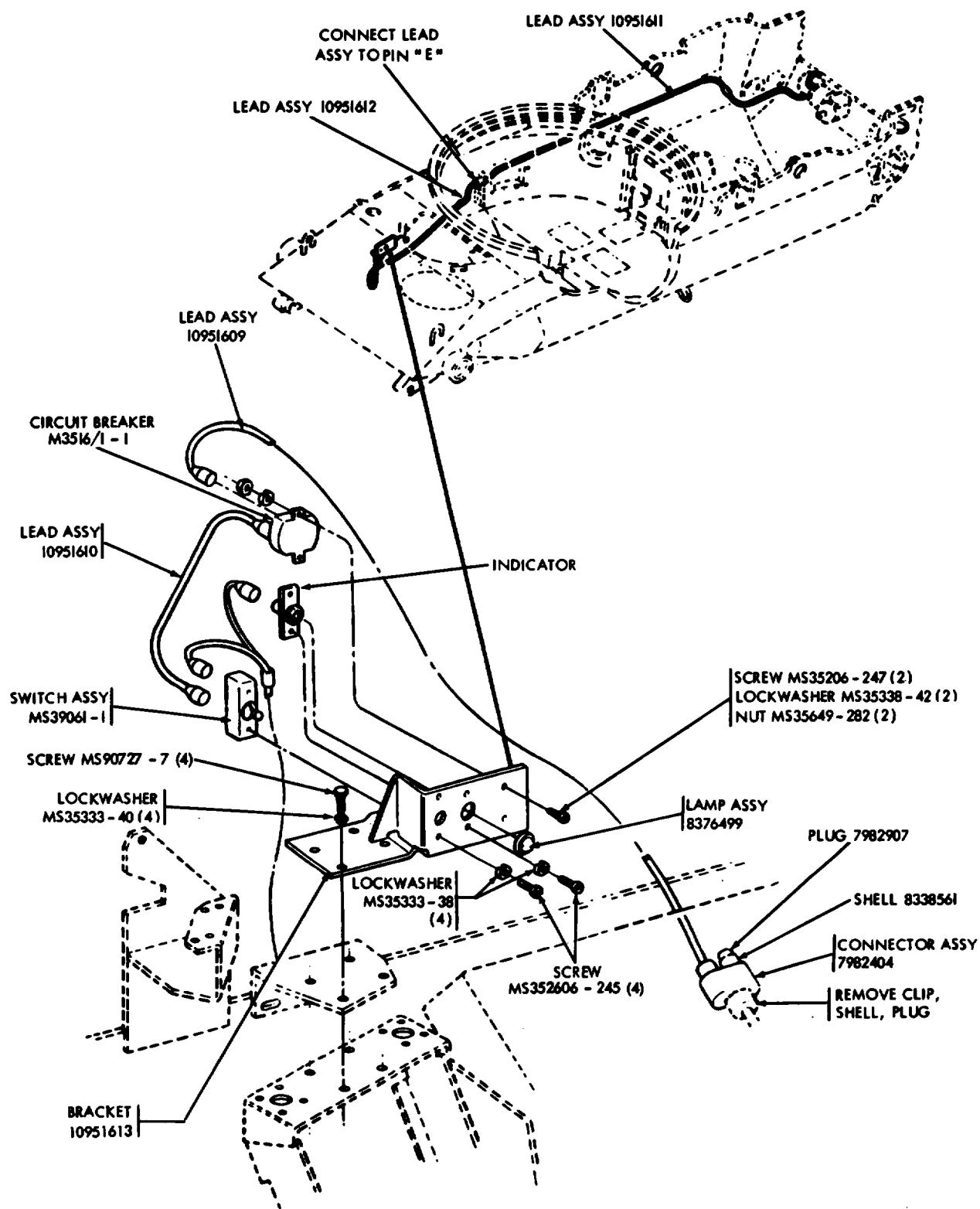
CAUTION

Do not operate the hydraulic pump longer than necessary. When it has been determined that the pump is not effectively circulating the oil for drainage, switch pump OFF or stop the engine immediately.



TA170047

Figure 9-22. Installation of electrical system (M60).



TA170048

Figure 9-23. Installation of electrical system (M60A1, M60A1 RISE, and M60A3).

NOTE

(b) Remove and clean oil filters (para 5-5 and fig 9-25).

Control lever must remain in H (hold) position during this process.

Section XV. INSTALLATION OF RESERVOIR VENT LINE

9-39. General. This section provides instructions for the installation of the reservoir vent line.

NOTE

Only vehicles having a top loading air cleaner can accept the M9 bulldozer kit. The air breather parts (reservoir vent line) installation is not compatible with the side loading air cleaner.

9-40. Reservoir Vent Line (Fig 9-26).

a. Apply sealing compound per specification MIL-S-45180, Type III to threads of elbow MS51815-37, and install elbow in air cleaner box.

b. Install hose assembly MS28762-60740 to elbow, and secure to side of air cleaner box with four clamps MS21333-126 using existing screws.

c. Place clamp MS21333-126 on hose assembly, and install on welded plate with screw MS90728-57, lockwasher MS35338-46, and washer MS27183-14. Do not tighten.

d. Install nipple MS51812-25 with packing MS828778-6 on each end of filter AN6240-1. Install filter to bracket 12257379 with nut MS35691-45 so that arrow on filter points toward bracket. Do not tighten.

e. Install assembled components to bracket on reservoir so that nipple on filter projects through slotted hole in bracket; secure with nut MS35691-45. Do not tighten.

f. Align slotted holes in bracket 12257379 with threaded holes in reservoir bracket, and install two screws M890728-4, lockwashers MS35338-44, and washers MS27183-10.

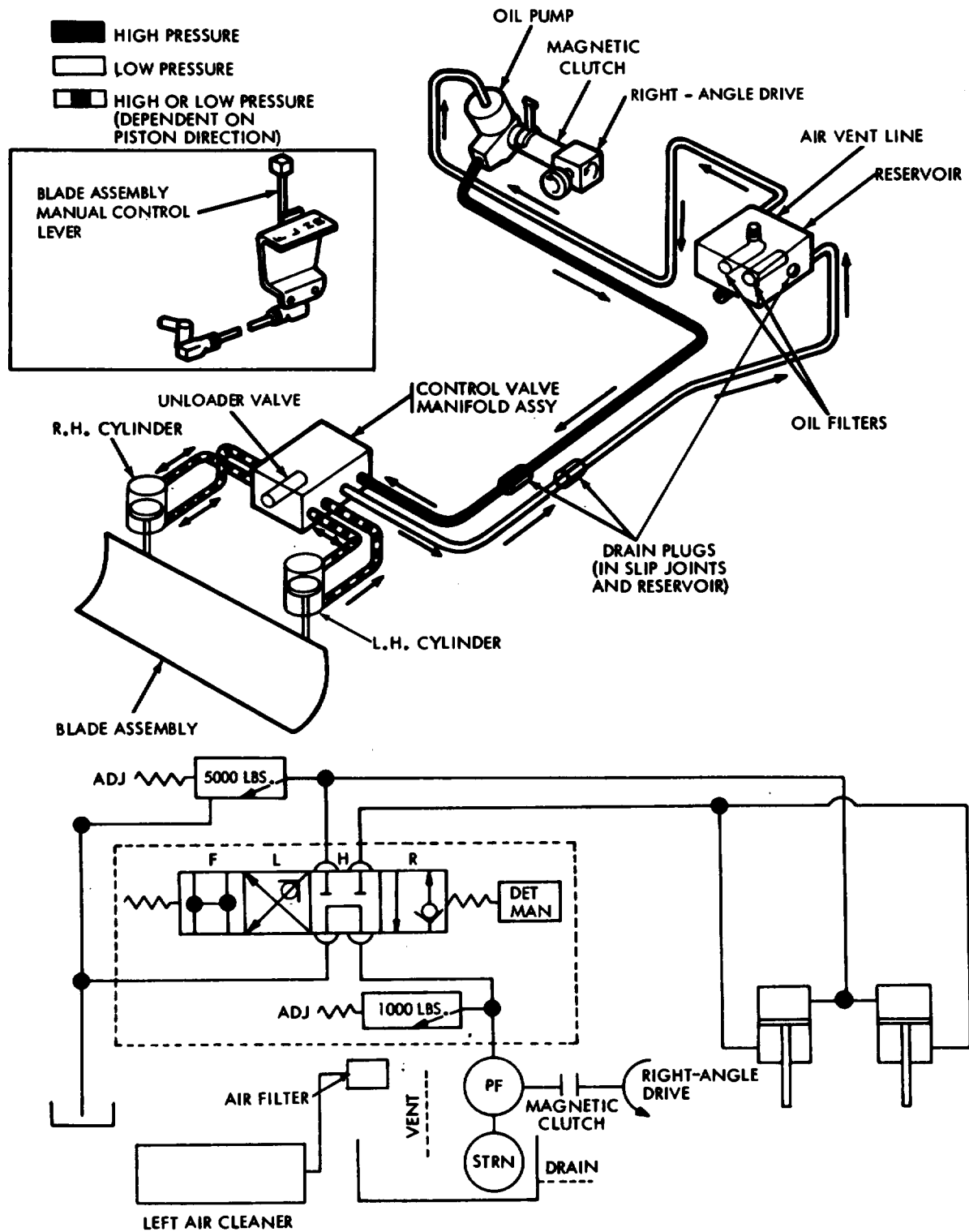
g. Remove plug in center of reservoir cover, and discard.

h. Apply sealing compound per specification MIL-S-45180, Type m to elbow 12257378, and install in reservoir cover.

i. Apply sealing compound per specification MIL-S-45180, Type III to adapter MS51819-37, and install to elbow.

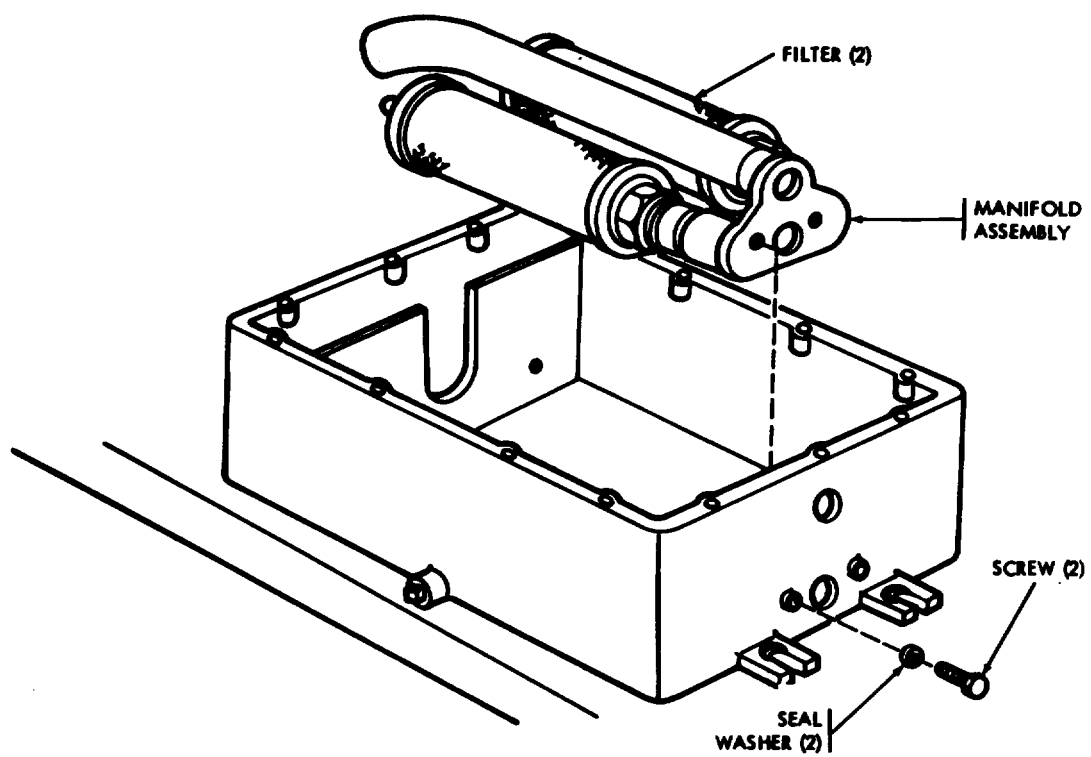
j. Install tube assembly 12257381 between elbow and filter. Start tube nuts on both ends; then align tube and filter so that tube assembly rests on reservoir cover. Tighten all nuts and screws on tube and filter.

k. Install hose assembly MS28762-60740 to other end of filter, and tighten hose and clamps previously left loose.



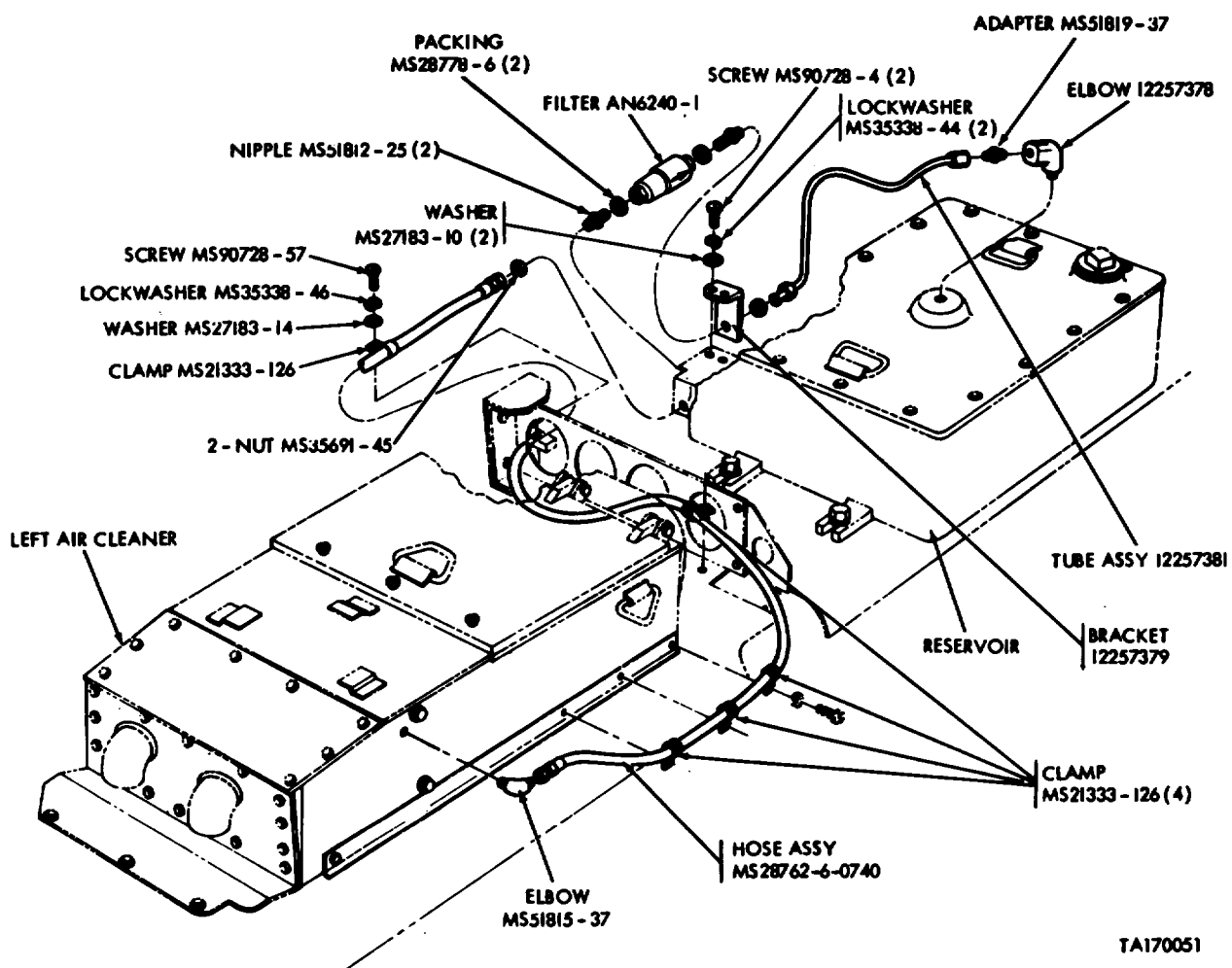
TA170049

Figure 9-24. Hydraulic system diagram.



TA170050

Figure 9-25. Removal of off filter.



TA170051

Figure 9-26. Installation of reservoir vent line.

Section XVI. INSTALLATION OF GUNNER'S STABILIZATION GUARD

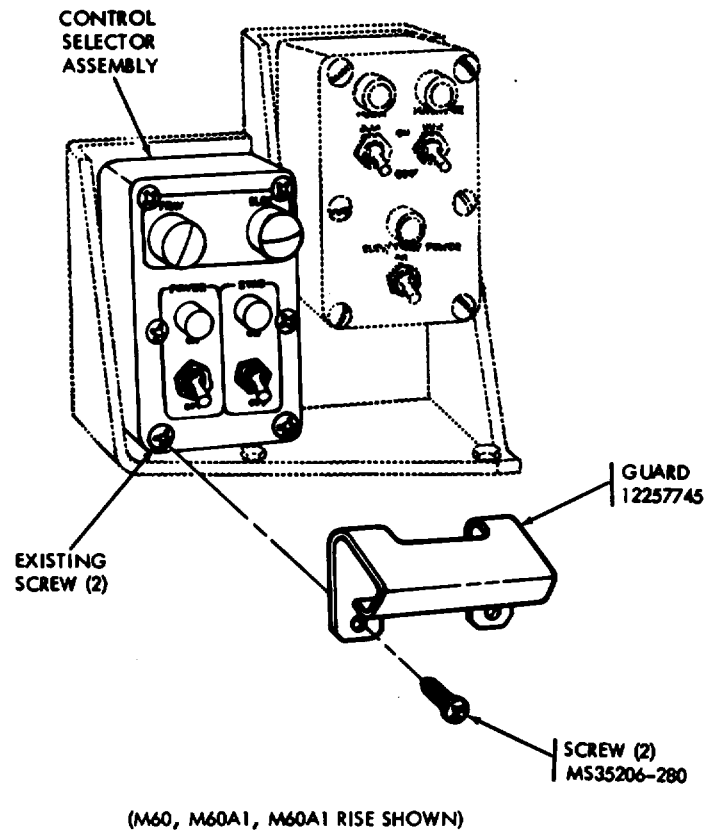
9-41. General. This section provides instruction for the installation of the gunner's stabilization guard.

NOTE

The guard can only be installed on vehicles with a stabilization system.

9-42. Gunner's Stabilization Guard (Fig 9-27).

- a. Remove and discard two lower screws from gunner's control selector assembly.
- b. Position guard 12257745 on control selector assembly and secure with two screws MS35206-280.



TA170052

Figure 9-27. Installation of gunner's stabilization guard.

CHAPTER 10

OPERATION AND MAINTENANCE OF PECULIAR
COMPONENTS FOR EARLY MODEL M9 BULLDOZER

Section I. GENERAL

10-1. Scope. This chapter contains instructions for operation and maintenance of peculiar components for the early model M9 bulldozer. This chapter must be used in conjunction with other portions of this manual for common components coverage, since only new, revised,

and common procedures repeated for changed illustrations are included. These common procedures are repeated to avoid excessive referencing and for ease of understanding. All references in this chapter shall be construed to mean early model M9 bulldozer.

Section II. DESCRIPTION AND TABULATED DATA

10-2. General. This section provides a brief description of tabulated data for peculiar components of early model M9 bulldozer.

10-3. Description. The primary differences between this group of early model M9 bulldozers and the late model (as specified in para 1-7) are: (1) mechanical clutch assembly, (2) mechanical clutch controls and linkage, (3) retaining pins for tilt arms and pushbeams, (4) headlight adapters, and (5) blade assembly carrying hooks and shaft.

10-4. Tabulated Data.

a. *General.* For common components tabulated data refer to paragraph 1-8.

b. *Rate of Lift.*

Tank engine at

1500 rpm	-----	4.62 inches per second
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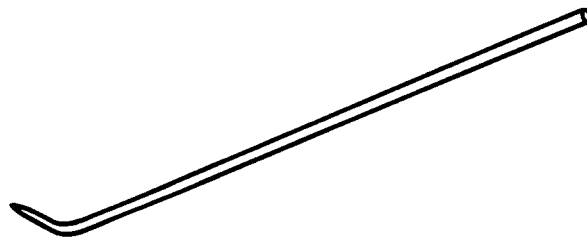
2850 rpm	-----	6.52 inches per second
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10-5. Special Tools and Equipment. A special tool designed for organizational, direct support and general support repair and general use with materiel is listed in table 10-1 and illustrated in figure 10-1. Table 10-1 and figure 10-1 contain item name and item sequence number for identification as used through this chapter. Table 10-1 also contains references to figures and paragraphs in this chapter which describe the use of the tool. Special tools for maintenance are listed in Appendix E, which is the authority for requisitioning replacements.

10-6. Spares and Repair Parts. Spares and repair parts are listed and illustrated in Appendix E of this manual

Table 10-1. Special Tool (Early Model Bulldozer)

Item	Identification Number	References Fig Para	Use
1. Tool: mechanical clutch adjusting (carried on engine shroud access door).	5120-00-179-5667	10-1 10-30	Adjust right-angle drive mechanical clutch.



**TOOL, MECHANICAL
CLUTCH ADJUSTING
5120-00-179-5667**

TA170053

Figure 10-1. Special tool (early model bulldozer).

Section III. OPERATING INRUCTIONS

10-7. Introduction.

a. This section contains operating instructions and information needed to locate and operate early model bulldozer controls and instruments.

b. Prior to operating bulldozer, perform before operation preventive maintenance checks and services contained in table 10-2.

10-4. Control (Fig 10-2).

a. *Mechanical Clutch Control Handle.* The mechanical clutch is controlled by a handle located in the crew compartment on the left side of the bulkhead. A flexible control cable extends from the bulkhead through the engine compartment to a yoke attached to the clutch

housing. The detents in the mechanical clutch control handle housing secure the clutch in the engage or disengage position. Push the handle to engage mechanical clutch and pull to disengage.

b. Carrying Hooks Control Handle.

The carrying hooks are engaged or disengaged by a manually operated control handle mounted on the hull in front of the driver's hatch. Pushing the control handle releases the carrying hooks when the blade assembly is raised.

c. Blade Assembly Manual Control Lever.

The directional control valve lever that controls the blade assembly operation is located in the driver's compartment. Move-

ment of the lever into one of its four positions will directly affect blade assembly accordingly.

10-9. M9 Bulldozer Operation.

a. The majority of the operating procedures for the early model bulldozer with mechanical clutch are identical to those late model bulldozers with magnetic clutch. The following text covers only those operating procedures that are different from corresponding procedures in chapter 2 of this manual.

b. Do not use bulldozer as a ram. The blade assembly must be used in a pushing technique rather than a ramming action. When blade assembly becomes loaded and it is necessary to turn vehicle, raise blade assembly slightly. Do not lower blade assembly to the extent that it will stall the vehicle engine. Take only such a cut as can be moved without stalling engine.

c. When dozing moist earth or sticky material, keep blade assembly clean by keeping it at dozing level during the last few feet of forward travel, then shift into reverse and back up several feet before raising blade assembly.

10-10. Preliminary Operating Procedure (Fig 10-3).

- a. Start engine and allow to idle.
- b. Push mechanical clutch handle to engaged position (view A).
- c. Move control lever to R (raised) position (view B).
- d. Push carrying hook handle to disengage hooks (view C).
- e. Move control lever to L (lower) position, and lower blade assembly to full limit of travel (view D).
- f. Raise and lower blade assembly several times. With blade in raised position, check oil level in reservoir (view E). Replenish as necessary.

a. 10-11. Operating Bulldozer in Hold Position (Fig 10-4)..

- a. Start engine and allow it to idle.
- b. Push mechanical clutch handle to engaged position (view A).
- c. Place vehicle shifting control in low gear, and move blade assembly manual control lever to L (lower) position (view B).
- d. When blade assembly reaches desired position, release control lever. It will automatically return to H (hold) position (view C).

NOTE

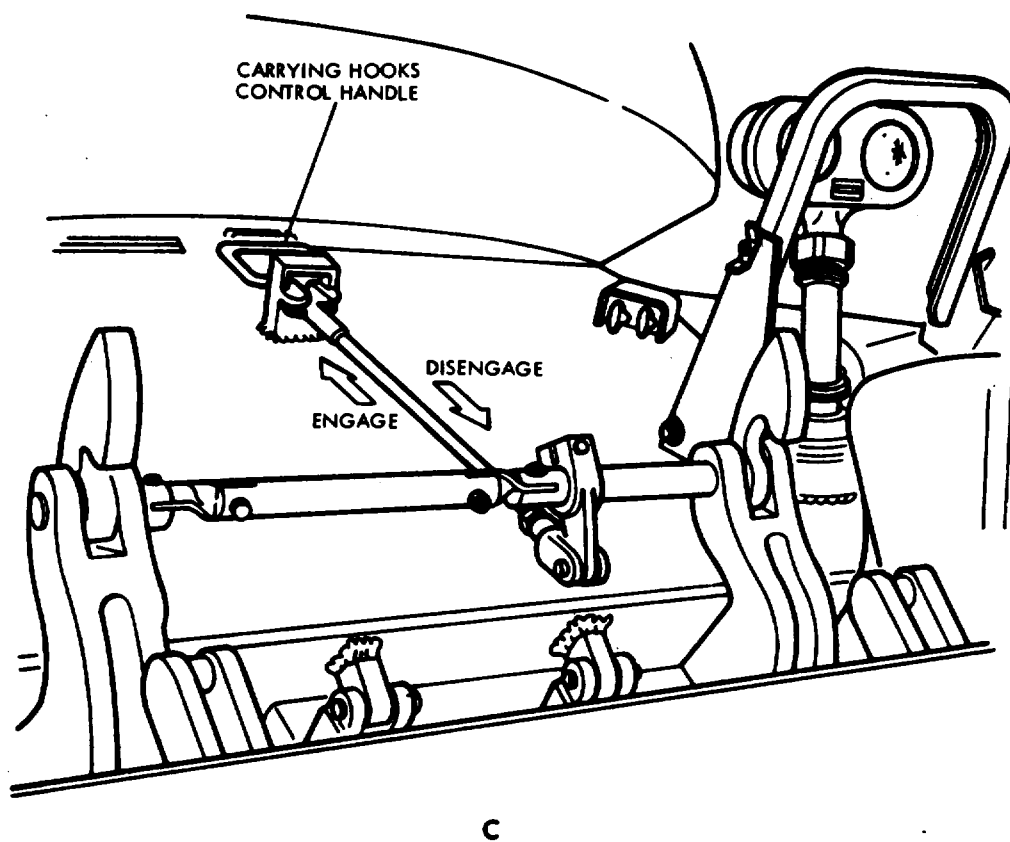
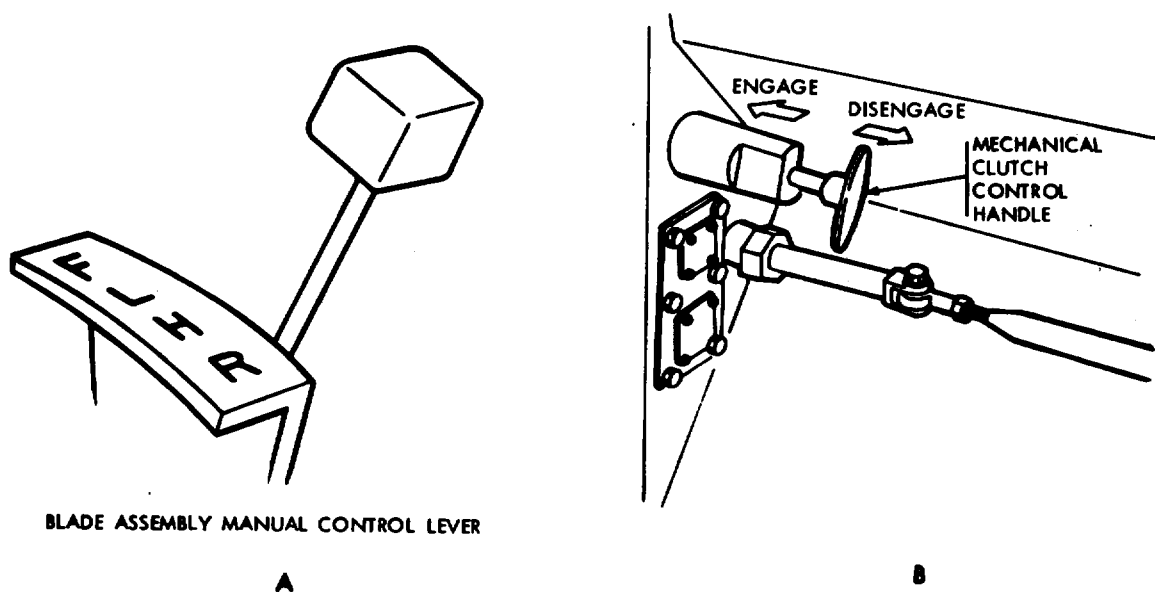
Always operate tank in low gear when dozing. Keep the tank at a steady speed, raising or lowering the blade assembly as required to compensate for uneven ground.

10-12. Operating Bulldozer in Float Position (Fig 10-5).

- a. Start engine and allow it to idle.
- b. Push mechanical clutch handle to engaged position (view A).
- c. Hold blade assembly control lever in L (lower) position (view B).
- d. When blade assembly touches ground, move control lever to F (float) position (view C).

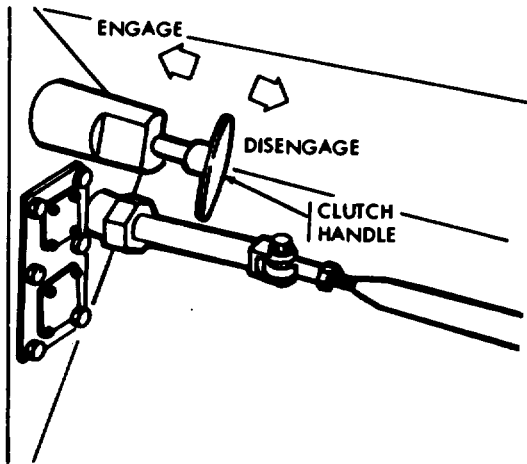
NOTE

When the blade assembly control lever is in the F (float) position, oil pressure has been diverted from the cylinders, allowing the blade assembly to ride on the ground with only its weight as downward pressure.

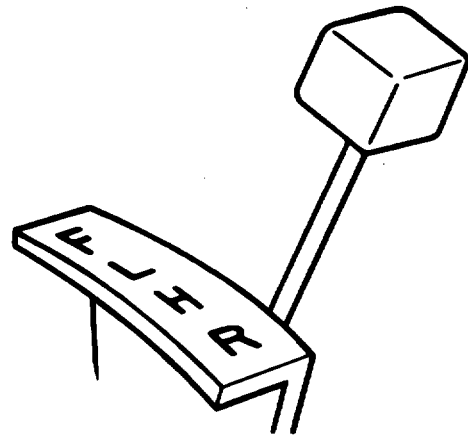


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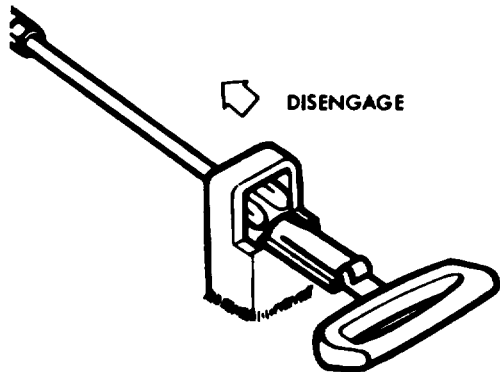
Figure 10-2. Controls (early model bulldozer).



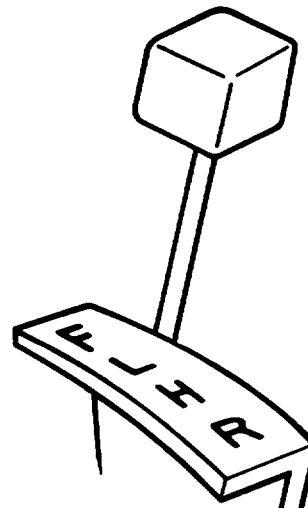
A. WITH THE TANK ENGINE IDLING, PUSH CLUTCH HANDLE TO ENGAGE POSITION.



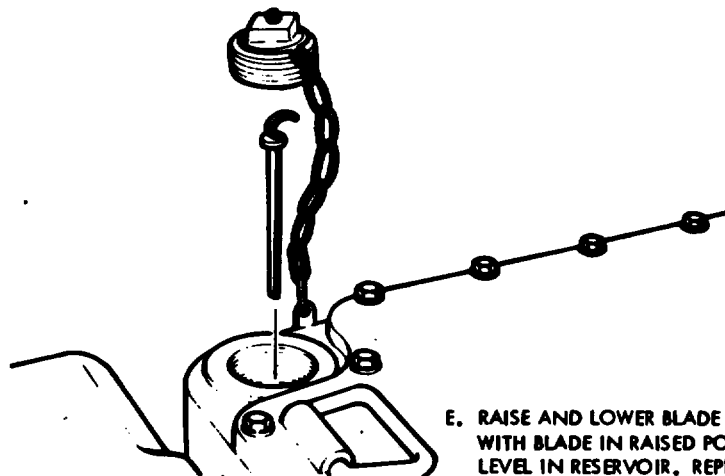
B. MOVE MANUAL CONTROL LEVER TO R POSITION



C. PUSH CARRYING HOOK HANDLE TO DISENGAGE HOOKS.



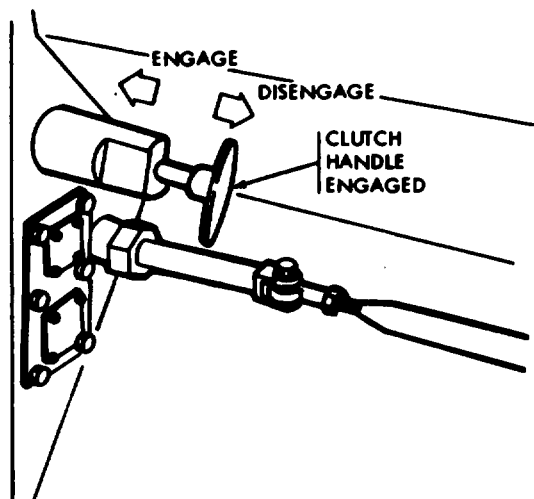
D. MOVE MANUAL CONTROL LEVER TO L POSITION AND LOWER BLADE ASSEMBLY.



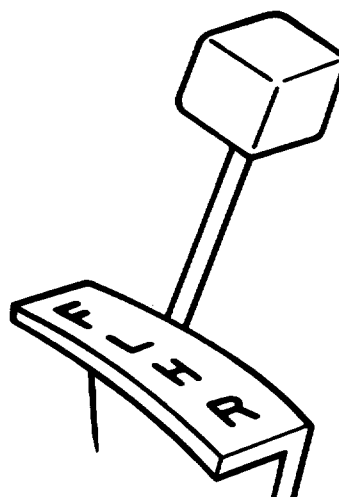
E. RAISE AND LOWER BLADE ASSEMBLY SEVERAL TIMES. WITH BLADE IN RAISED POSITION, CHECK THE OIL LEVEL IN RESERVOIR. REPLENISH AS NECESSARY.

TA170055

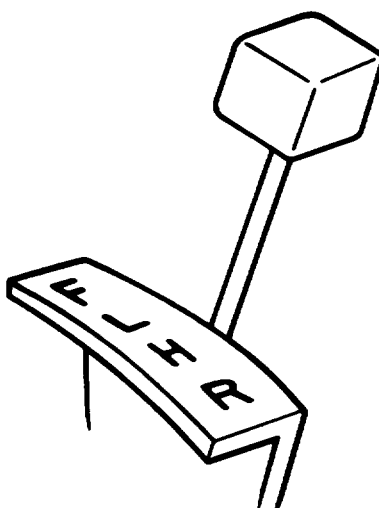
Figure 10-3. Preliminary operating procedure (early model bulldozer).



A. WITH TANK ENGINE IDLING, PUSH CLUTCH HANDLE TO ENGAGED POSITION.



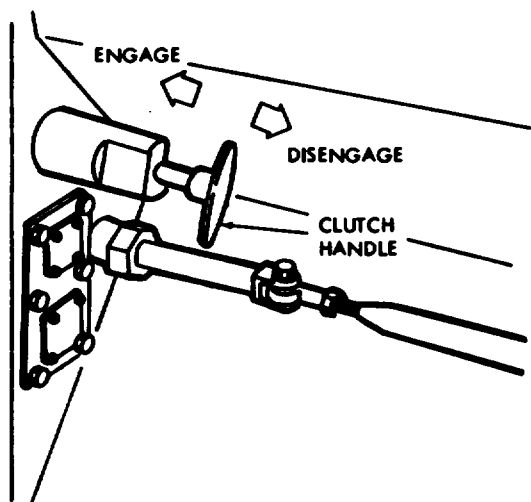
B. WITH TANK MOVING IN LOW GEAR, MOVE THE BLADE ASSEMBLY MANUAL CONTROL LEVER TO L POSITION.



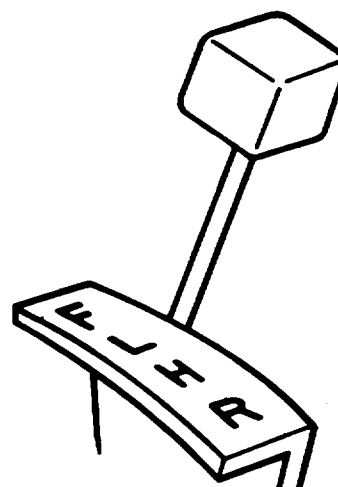
C. WHEN THE BLADE ASSEMBLY REACHES THE DESIRED POSITION, RELEASE THE MANUAL CONTROL LEVER. IT WILL AUTOMATICALLY RETURN TO H POSITION.

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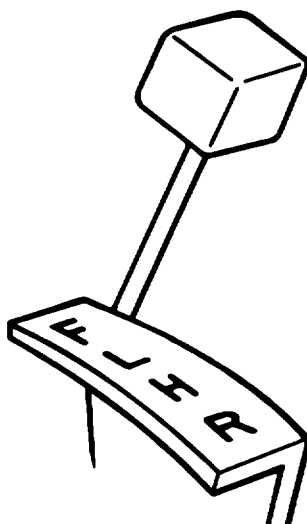
Figure 10-4. Operating bulldozer in hold position (early model bulldozer).



A. WITH THE ENGINE RUNNING, PUSH CLUTCH HANDLE TO ENGAGE POSITION.



B. HOLD BLADE ASSEMBLY MANUAL CONTROL LEVER IN L POSITION.



C. WHEN BLADE ASSEMBLY TOUCHES GROUND, MOVE MANUAL CONTROL LEVER TO F POSITION.

TA170057

Figure 10-5. Operating bulldozer in float position (early model bulldozer).

10-13. Vehicle Movement.

a. Up-and-down motion of vehicle must be compensated for by lowering or raising blade assembly. When front of vehicle starts to nose up, lower blade assembly far enough to compensate for vehicle motion. If vehicle engine becomes overloaded when cutting through very hard material, raise blade assembly until load on engine is reduced. When blade assembly is lower and digging, lift it slightly before turning vehicle.

NOTE

The vehicle turning radius is increased greatly when the blade assembly is in the digging position.

b. Keep vehicle at a steady speed when dozing, raising or lowering blade assembly as required to compensate for uneven ground. Always operate vehicle in low gear.

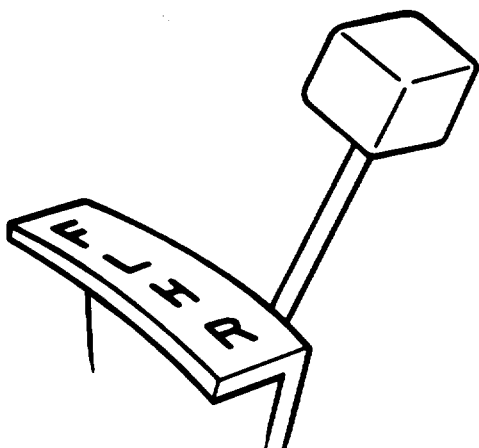
10-14. Removing Bulldozer from Operation (Fig 10-6).

a. Move manual control lever to R (raised) position (view A).

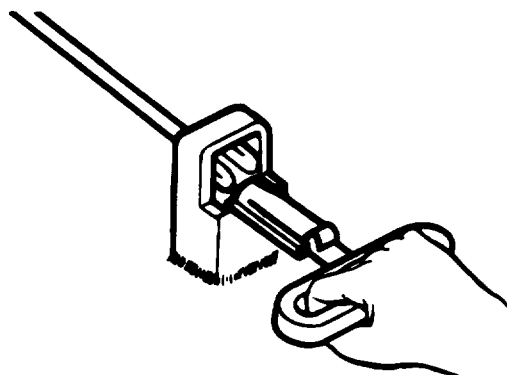
b. Pull handle to engage carrying hooks (view B).

c. When carrying hooks are engaged, control lever will automatically return to H (hold) position (view C).

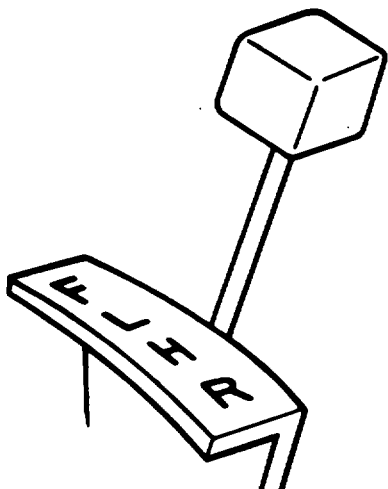
d. Pull mechanical clutch handle to disengage position (view D).



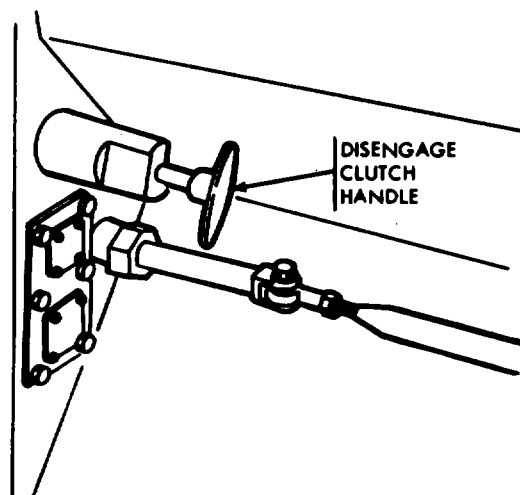
A. MOVE BLADE ASSEMBLY MANUAL CONTROL LEVER TO R POSITION.



B. WHEN BLADE IS FULLY ELEVATED, PULL HANDLE TO ENGAGE CARRYING HOOKS.



C. WHEN THE CARRYING HOOKS ARE ENGAGED, RELEASE THE MANUAL CONTROL LEVER. LEVER WILL AUTOMATICALLY RETURN TO H POSITION.



D. PULL CLUTCH HANDLE TO DISENGAGE POSITION.

TA170058

Figure 10-6. Removing bulldozer from operation (early model bulldozer).

Section IV. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

10-15. General Preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain it in a serviceable condition, prevent breakdown, and insure maximum operational readiness. Refer to paragraph 2-4 for procedures common to both late and early model M9 bulldozers.

10-16. Specific Procedures.

a. Preventive maintenance checks and services (PMCS) to be performed daily each time the early model bulldozer is operated are listed in table 10-2.

b. Refer to TM 38-750 for recording malfunctions.

Table 10-2. Operator/Crew Preventive Maintenance Checks and Services.

NOTE: Within designated interval, these checks are to be performed in the order listed.

B - Before
D - During

A - After
W - Weekly

M - Monthly

Item No.	Interval				Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment will be reported Not Ready (Red) if:
	B	D	A	W			
1	•				RESERVOIR.	<p style="text-align: center;"><u>CAUTION</u></p> <p>Continuously check for evidence of oil leaks; loose or missing hardware, bolts, nuts, or clamp, and unusual noises.</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>Oil in reservoir must be maintained at proper level for satisfactory performance of hydraulic pump.</p> <p>Check oil in reservoir. Fill to "FULL" mark on dipstick (fig 3-1).</p>	Class III oil leak.
2	•	•			BLADE ASSY MANUAL CONTROL LEVER	<p>Check blade assembly control lever for-free operation. With vehicle engine idling, place hydraulic pump switch in ON position. Disengage carrying hooks and operate control handle. Check that blade assembly responds correctly to movement of the control lever.</p>	Blade assembly will not respond to movement of control lever.

Table 10-2. Operator/Crew Preventive Maintenance Checks and Services.- Continued**NOTE:** Within designated interval, these checks are to be performed in the order listed.B - Before
D - DuringA - After
W - Weekly

M - Monthly

Item No.	Interval				Item to be Inspected	Procedures Check for and have repaired or adjusted as necessary	Equipment will be reported Not Ready (Red) if:
	B	D	A	W			
3		•			HEADLAMP ADAPTERS	Inspect headlamp adapters for damage and locknuts for tightness.	
4	•				MOLDBOARD CARRYING HOOKS AND HANDLE	Check that moldboard carrying hooks are not cracked or broken. Check that carrying hooks operating handle is not bent or broken.	
5		•			HYDRAULIC CYLINDERS	Check in area of left and right hydraulic cylinders for oil leaks. Check that cylinder rod is not bent or broken.	Class III oil leak. Cylinder rod bent or broken.
6		•			TILT ARMS	Check that left and right tilt arms are not cracked or broken.	
7		•			PUSHBEAMS	Check that left and right pushbeams are not cracked or broken.	
8		•			MOLDBOARD BLADE	Check moldboard for cracks and loose or missing hardware.	
9		•			MOLDBOARD CUTTING EDGE	Check cutting edge for cracks, breaks, and	Cutting edge cracked or missing hardware. broken.
10			•		EMERGENCY LIFT CABLES	Check for kinked, frayed, broken, or missing lift cable. Check cable for loose or missing hardware.	

Section V. OPERATOR/CREW MAINTENANCE INSTRUCTIONS

10-17. Lubrication. The operator/crew lubrication instructions for both early and late model M9 bulldozers are identical. Refer to paragraph 3-3 and figure 3-1 for common procedures.

10-18. Troubleshooting. The operator/crew troubleshooting for both early and late model M9 bulldozers are identical. Refer to paragraph 3-4 and table 3-1 for common procedures.

Section VI. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

10-19. Lubrication Instructions.

a. The lubrication instructions contained in this section apply only to early model bulldozer. Normally crew will assist maintenance personnel in lubrication of materiel. Any special lubrication instructions required for specific mechanisms or parts are prescribed in appropriate sections of this manual. b. Service intervals specified in lubrication instructions are for normal operating and where moderate temperatures, humidity, and atmospheric conditions exist. Reduce intervals to compensate for abnormal operation and severe conditions or contaminated lubricants.

10-20. Lubrication Guide. The lubrication guide (fig 10-7) prescribes lubrication procedures, lubrication points, intervals, and proper lubricants to be used for early model bulldozer with mechanical clutch. For common component lubrication between early and late model bulldozers, refer to figure 41.

10-21. Preventive Maintenance Checks and Services (PMCS).

a. The preventive maintenance checks and services (PMCS) provide comprehensive checks to insure trouble-free operation of bulldozer until next scheduled PMCS. Table 10-3 contains peculiar PMCS for early model bulldozer. Refer to table 4-1 for common components PMCS.

b. For intervals of scheduled preventive maintenance services and conditions upon which maintenance will be performed, refer to paragraphs 4-5 and 4-6.

10-22. Maintenance of Headlamp Adapters.

a. Description. Headlamp adapters are mounted to vehicle headlamp receptacles to raise the headlamps permitting illumination when the M9 bulldozer blade is in the raised position. Two guards protect the headlamps from brush and debris damage.

b. Removal (Fig 10-8).

(1) Remove two bolts, lockwashers, wingnuts, washers, and cotter pins securing headlamp guard to supports. Remove headlamp guard.

(2) Remove two bolts and washers securing support to mounting brackets, and remove support.

(3) Remove two bolts and washers securing support to fender, and remove support.

(4) Remove screw and washer securing block to support. These parts are used on vehicles with serial numbers 3340 and up only.

(5) Disconnect headlamp from adapter assembly.

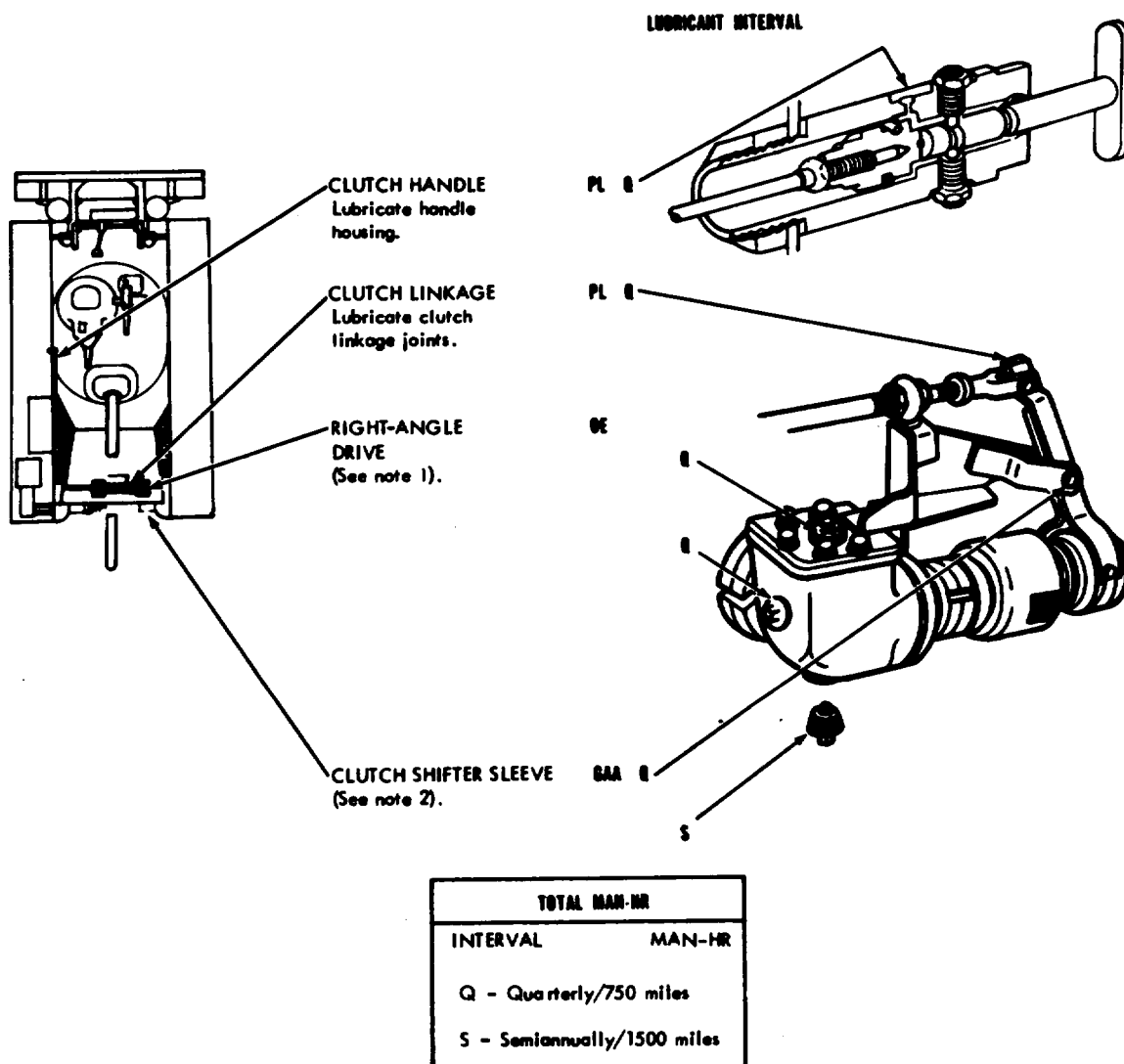
ORGANIZATIONAL MAINTENANCE LUBRICATION GUIDE FOR EARLY MODEL M9 BULLDOZER

Interval and the related manhour times are based on normal operation. The manhour time specified is the time required to perform all services prescribed for a particular interval. The interval shall be changed to compensate for abnormal operation and severe operating conditions or contaminated lubricants. The interval may be extended during periods of low level activity, commensurate with adequate preservation precautions.

Park vehicle on level ground to check oil levels.

Clean fittings before and after lubricating with a dry, lint free cloth.

Lubricate all items found contaminated after fording or washing.



TA170059

Figure 10-7. Lubrication guide for early model M9 bulldozer (sheet 1 of 2).

KEY

LUBRICANTS/COMPONENTS	EXPECTED TEMPERATURE			
	Above +32°F	+40°F to -10°F	0°F to -65°F	
OE/HDO - OIL, ENGINE, HEAVY DUTY MIL-L-2104				For Arctic Operation refer to FM 9-207
OEA-OIL, ENGINE, ARCTIC MIL-L-46167				
RIGHT-ANGLE DRIVE	OE/HDO-10	OE/HDO-10	OEA	
PL-M - OIL, LUBRICATING PRESERVATIVE MIL-L-3150	PL-M			
PL-S - OIL, LUBRICATING, GENERAL PURPOSE VV-L-800		PL-S	PL-S	
GAA-GREASE, AUTOMOTIVE AND ARTILLERY MIL-G-10924				

NOTES:

1. RIGHT-ANGLE DRIVE. Fill to level of plug located on side of drive housing. Check level quarterly by removing plugs and filling to plug level. Drain semiannually, and only after operation, by removing drain plug on bottom of drive housing. Refill to proper level.
2. CLUTCH SHIFTER SLEEVE. Slide sleeve back, clean and lubricate with film GAA. Service often if lubricant becomes contaminated. Clean and lubricate shifting lugs.

TA170060

Figure 10-7. Lubrication guide for early model M9 bulldozer (sheet 2 of 2).

**Table 10-3. Organizational Preventive Maintenance Checks and Services
Quarterly Schedule (Early Model Bulldozer).**

Item No.	Item To Be Inspected	Procedures
1	Tilt Arm	Inspect tilt arm pins, nuts, and cotter pins for security and/or damage.
2	Blade Assy Carrying Hooks	Inspect hooks, shafts, arm, coupling, and handle for wear and/or distortion.
3	Blade Assy and Pushbeam	Inspect for distortion that could damage pins, screws, lockwashers, and locks.
4	Right-Angle Drive Power Takeoff Assembly	Inspect operation of blade assembly to determine that mechanical clutch is operating.
		NOTE
		If operation of blade assembly is slow or jerky, check oil level in reservoir and refill if necessary.
5	Mechanical Clutch	Inspect for loose mechanical linkage. Check clutch for correct adjustment.

(6) Disconnect adapter assembly from headlamp mount.

c. Inspection. Inspect assemblies/parts for wear and/or damage. If repair is required, continue with the following procedures.

d. Disassembly (Fig 10-9).

(1) Turn adapter assembly with base (13) down.

(2) Remove seven pins (21) and insert (11).

(3) Remove three screws (1), washers (2), lockwashers (8), and nuts (9) securing holder (5) to adapter (7).

(4) Remove rivet (20), nut (4), ring (3), and gasket (6) from adapter.

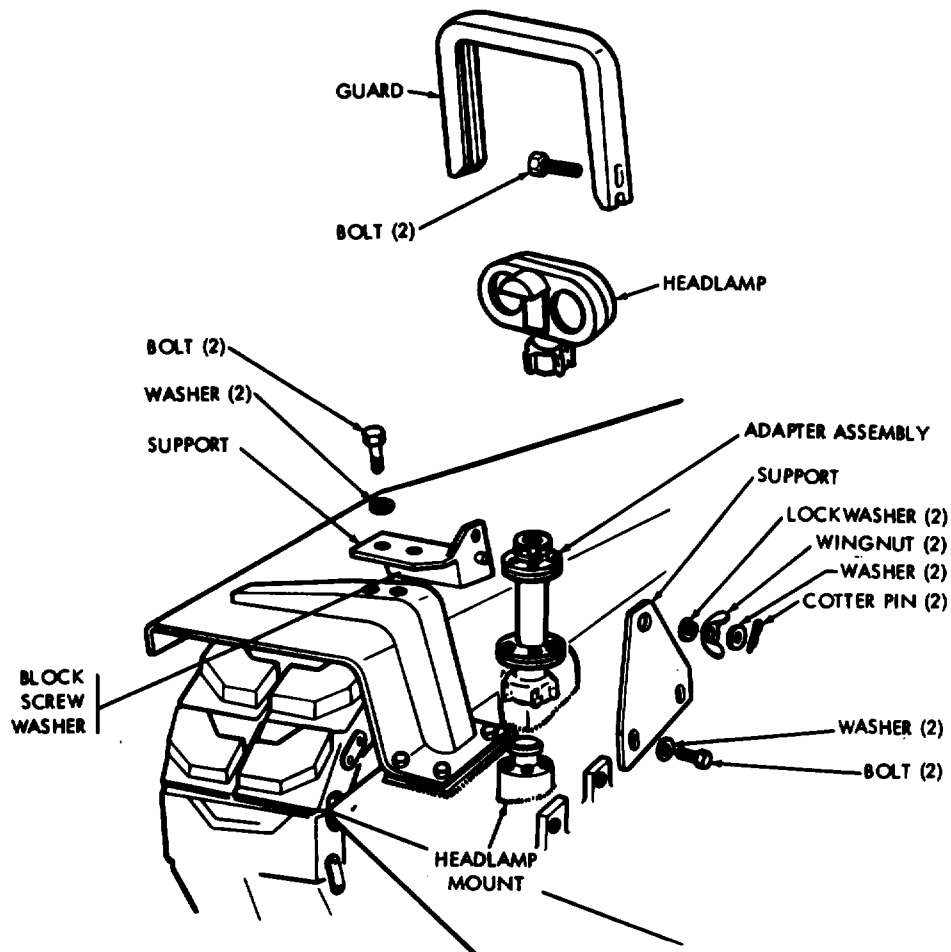
(5) Invert the adapter assembly and remove seven contacts (10), insert (11), and gasket (12).

(6) Remove three screws (1), washers (2), lockwashers (8), and nuts (9), securing base (13) to adapter (7).

(7) Remove gasket (6).

(8) Remove cable (17) from adapter (7).

(9) Remove grommet (18) and rods (16) and (19) from cable.



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Figure 10-8. Removal or installation of headlamp adapter (early model bulldozer).

e. Assembly (Fig 10-9).

(1) Install grommet (18) and rods (16) and (19) in cable (17).

(2) Install cable into adapter (7).

(3) Install gasket (6) on adapter.

(4) Place base (13) on gasket and adapter, and secure with three screws (1), washers (2), lockwashers (8), and nuts (9).

(5) Install gasket (12), insert (11), and seven contacts (10) into cable (17).

(6) Invert the adapter assembly.

(7) Assemble gasket (6), ring (3), nut (4), rivet (20), and holder (5) on adapter, and secure with three screws (1), washers (2), lockwashers (8), and nuts (9).

(8) Install insert (11) and seven pins (21).

f. Installation (Fig 10-8).

(1) Connect adapter assembly to headlamp mount.

(2) Connect headlamp to adapter assembly.

(3) Position block to support, and secure with screw and washer. These parts are used on vehicles with serial numbers 3340 and up only.

(4) Install support to fender, and secure with two bolts and washers.

(5) Install support to mounting bracket, and secure with two bolts and washers.

(6) Install headlamp guard, and secure with two bolts, lockwashers, wingnuts, washers, and cotter pins.

10-23. Maintenance of Blade Assembly.

a. Description. The front mounting brackets and blade assembly consist of heavy-duty moldboard and cutting edge supported by a linkage attached to mounting brackets located on the front lower slope of the vehicle hull. The linkage is composed of two push beams (left and right) and four tilt arms (left and right outboard and left and right inboard). Up-and-down motion of the blade assembly is accomplished by two hydraulically operated double-acting cylinder and ram assemblies. The ram ends are connected by pivot pins to the pushbeams.

b. Removal (Fig 10-10).

(1) Place vehicle on level terrain and lock parking brake.

(2) Attach hoisting device to lifting eyes on top of blade assembly (view A).

(3) Hoist blade assembly to stowed position and lock.

(4) Remove lower two screws and lockwashers securing left and right outer tilt arm retaining caps to mounting brackets (view B).

(5) Lower blade assembly to float position.

(6) Remove the upper two screws and lockwashers securing left and right outer tilt arm retaining caps to mounting brackets (view B).

(7) Remove left and right outer tilt arm retaining caps (view B).

(8) Remove outer tilt arm from hull mounting bracket (view B).

(9) Insert crowbar and use as lever to support weight of inner tilt arm (left and right) (view C).

(10) Remove cotter pins, nuts, and pin securing inner tilt arms (left and right) to hull mounting brackets (view C).

(11) Release leverage on crowbar, and lower inner tilt arms to rest on rear of blade assembly (view C).

(12) Raise bottom edge of blade assembly with rams or jacks, while maintaining slack in hoist chains and tilt blade assembly face toward ground. When maximum tilt is obtained, lower rams until bottom edge of blade assembly rests on ground. Remove slack in hoist chain.

(13) Remove screws and lockwashers securing ram arm pin locks (left and right) (view D).

(14) Remove ram arm pivot pins (left and right) (view D).

NOTE

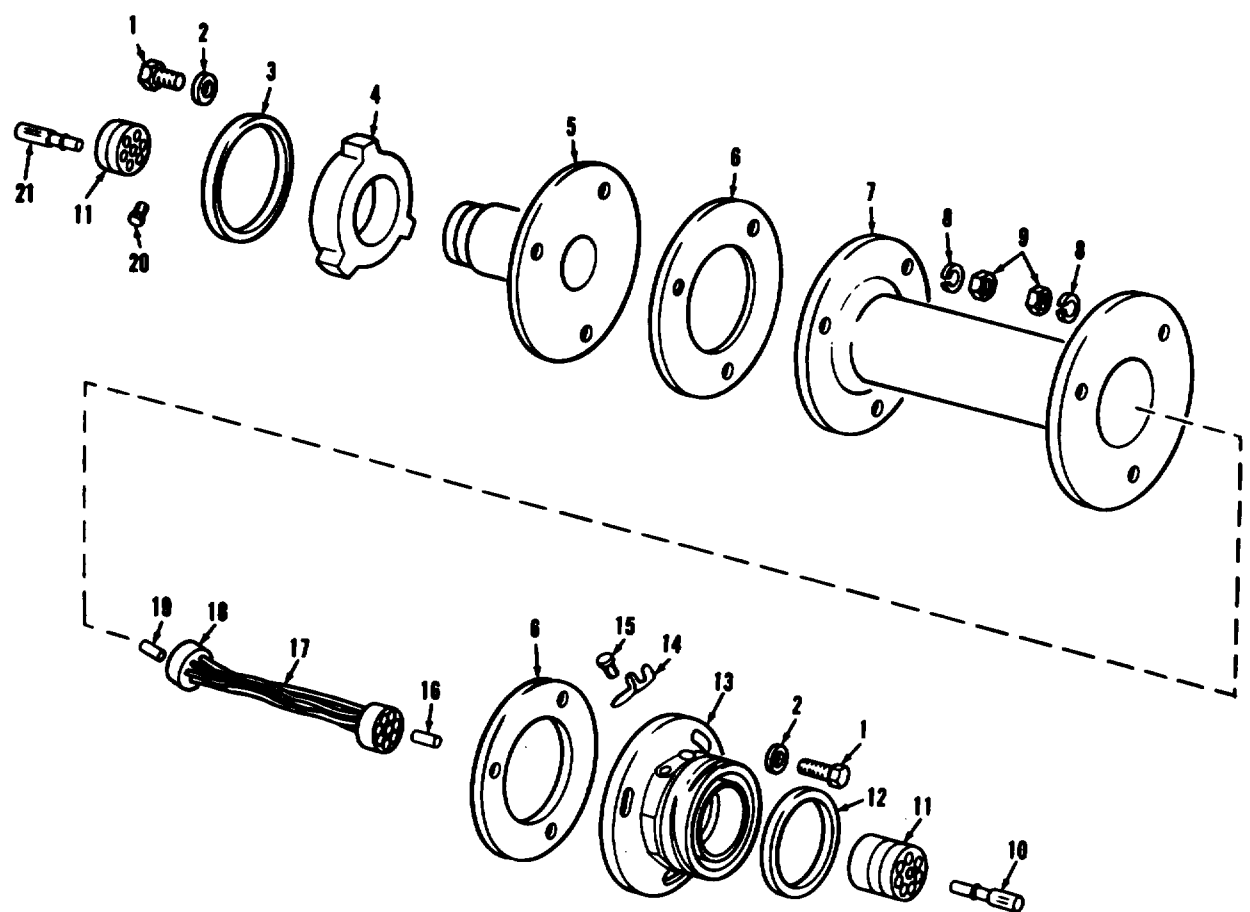
Lift with hoist as necessary to allow removal of pins. Raise ram arms to clear pushbeam wells and tie arms in raised position.

(15) Remove cotter pins, nuts, and pins securing left and right pushbeams to mounting brackets (view E).

(16) Lift with hoist until pushbeams connecting ends are clear of mounting brackets (view E).

(17) Back vehicle away from blade assembly.

(18) Lower hoist until blade assembly is resting on ground.



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1	Screw (6)	12	Gasket	15	Screw
2	Washer (6)	13	Base	16	Rod
3	Ring	14	Clip	17	Cable
4	Nut	8	Lockwasher (6)	18	Grommet
5	Holder	9	Nut (6)	19	Rod
6	Gasket (2)	10	Contact	20	Rivet
7	Adapter	11	Insert (2)	21	Pin (7)

Figure 10-9. Disassembly or assembly of headlamp adapter (early model bulldozer).

(19) Fold pushbeams over back of blade assembly.

(20) Remove hoist chain.

c. *Disassembly (Fig 10-11).* Remove screws, lockwashers, locks, pins, bolts, nuts, and cotter pins securing outer tilt arms, inner tilt arms, and pushbeams to blade assembly.

d. *Assembly (Fig 10-11).* Position outer tilt arms, inner tilt arms, and pushbeams to blade assembly and secure with screws, lockwashers, locks, pins, nuts, and cotter pins.

e. *Installation (Fig 10-10).*

(1) Place blade assembly on ground, face down with cutting edge towards and parallel to the front of the vehicle.

(2) Attach hoist chains to lifting eyes on top of blade assembly.

(3) Unfold pushbeams until extended toward vehicle.

(4) Lift with chain hoist until connecting ends of pushbeams are positioned at same height from ground as mounting brackets on hull.

(5) Move vehicle forward to position brackets in pushbeams.

(6) Install pins and secure with nuts, and cotter pins (view E).

(7) Install ram arm locks (left and right), and secure with pivot pins, screws, and lockwashers (view D).

(8) Activate hydraulics and raise bottom edge of blade assembly off ground 3 to 4 inches. Apply lifting power using chain hoist, to tilt blade assembly toward a vertical position.

(9) Insert crowbar and apply leverage to raise inner tilt aims (left and right) to mounting position on hull mounting brackets (view C).

(1) (10) Install pins, locks, lockwashers, and screws (view C).

(11) Position outer tilt arms in hull mounting brackets (view B).

(12) Position left and right outer tilt arm retaining caps (view B).

(13) Install the upper two screws and lockwashers securing left and right outer tilt arm retaining caps to mounting bracket (view B).

(14) Raise blade assembly to stowed position.

(15) Install the lower two screws and lockwashers securing left and right outer tilt arm retaining caps to mounting brackets (view B).

(16) Remove hoisting chains from lifting eyes on top edge of blade assembly (view A).

10-24. Maintenance of Pushbeam.

a. *Description.* The pushbeams are located between the vehicle and the blade assembly. The ram assembly is attached to the pushbeam; up-and-down motion on the pushbeams causes the blade assembly to be raised or lowered.

b. *Removal (Fig 10-12).*

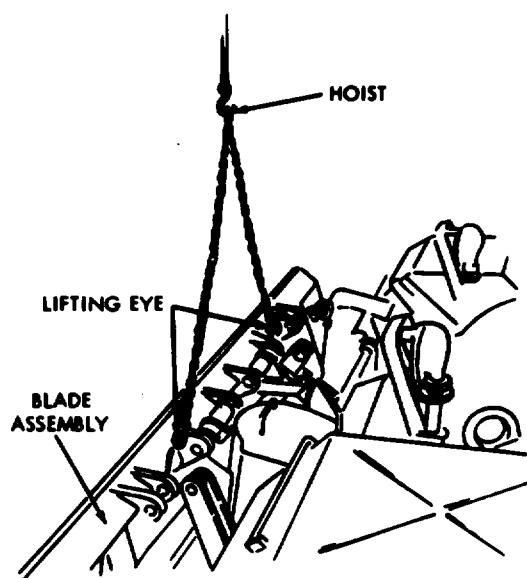
NOTE

Procedures for both left and right sides are the same.

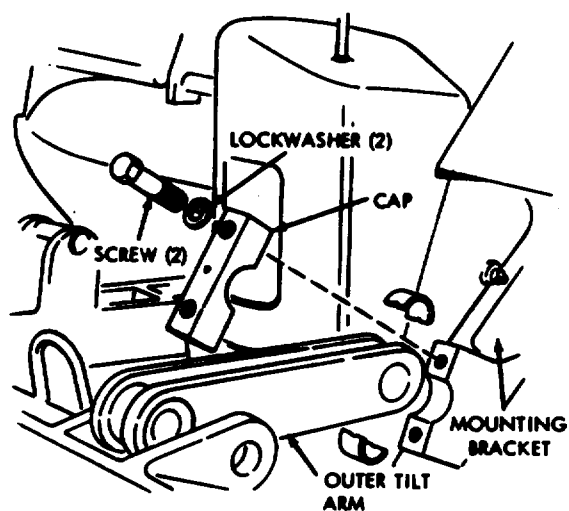
(1) Lower blade assembly to rest on ground.

WARNING

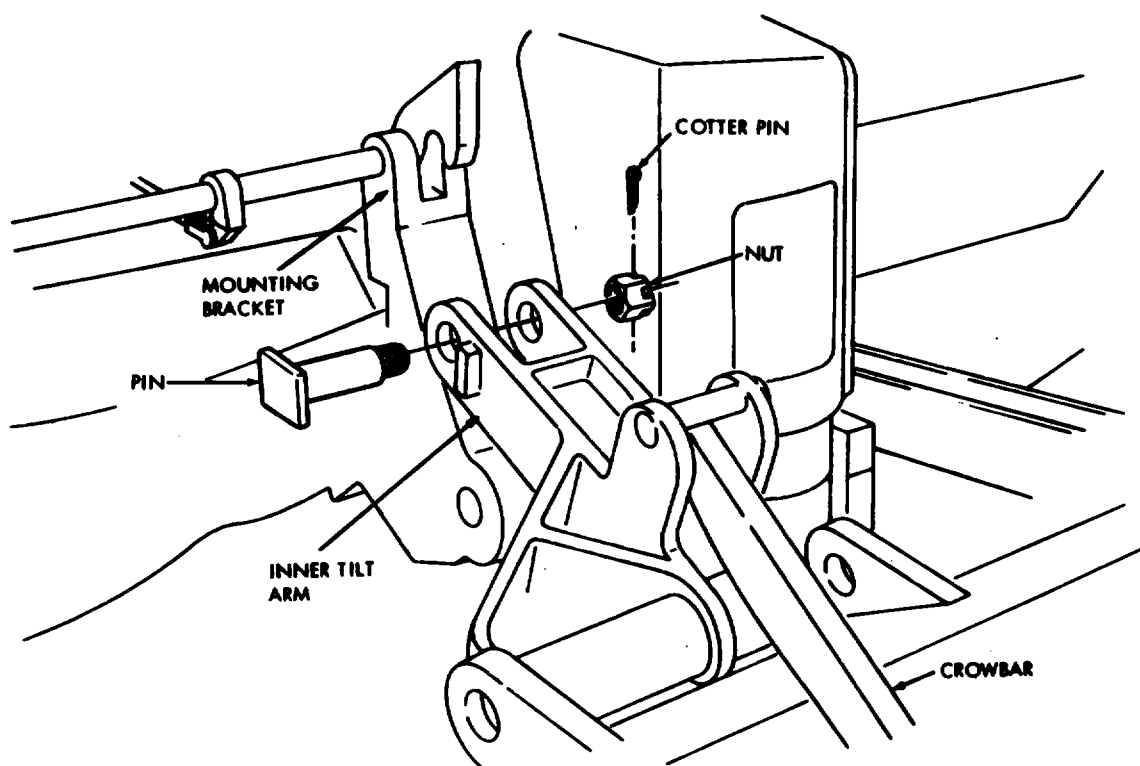
Before removing pin, support weight of pushbeam with a floor jack or wood Block.



A



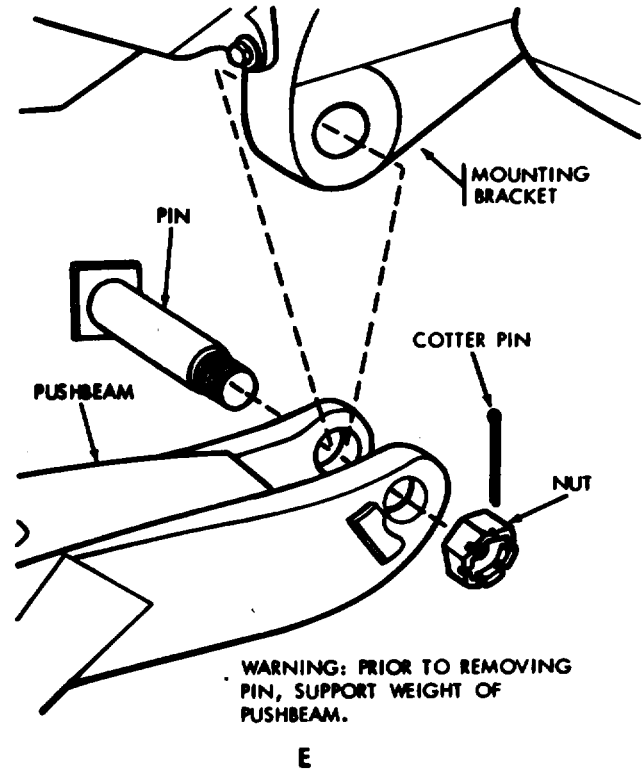
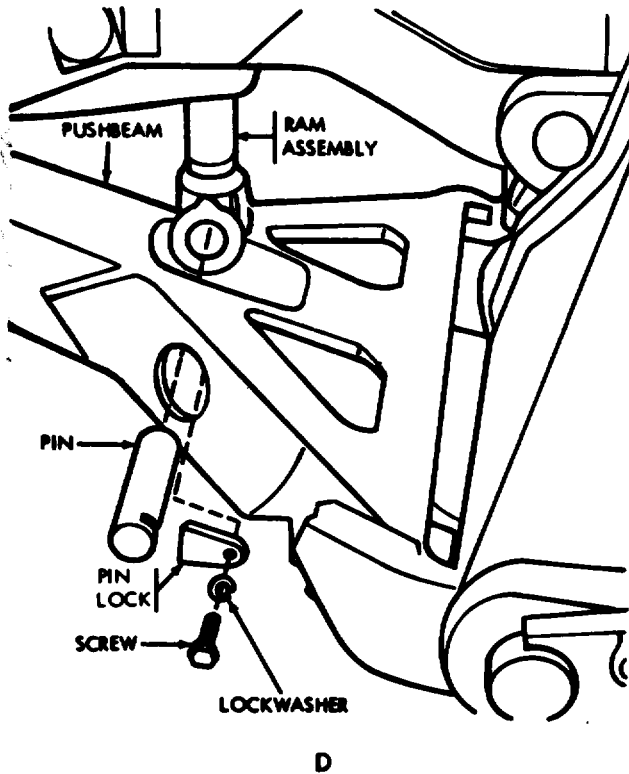
B



C

TA170063

Figure 10-10. Removal or Installation of blade assembly (sheet 1 of 2).



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Figure 10-10. Removal or installation of blade assembly (sheet 2 of 2)

(2) Remove screw, lockwasher, and lock securing pin. Remove pin securing ram assembly to pushbeam (view A).

(3) Remove cotter pin, nut, and pin securing pushbeam to mounting bracket (view B).

(4) Install lifting device to pushbeam.

(5) Remove two cotter pins, nuts, and pins securing pushbeam to blade assembly, and remove pushbeam (view C).

c. Cleaning and inspection.

(1) Clean all parts, including ho mating surfaces, using drycleaning solvent.

(2) Inspect all components for cracks or damage.

(3) Inspect machined surfaces for pitting or wear.

(4) Inspect remaining hardware for wear, damaged threads, and general serviceability. Replace components, as required.

d. Installation (Fig 10-12).

NOTE

Procedures for both left and right sides are the same.

(1) Install lifting device to pushbeam.

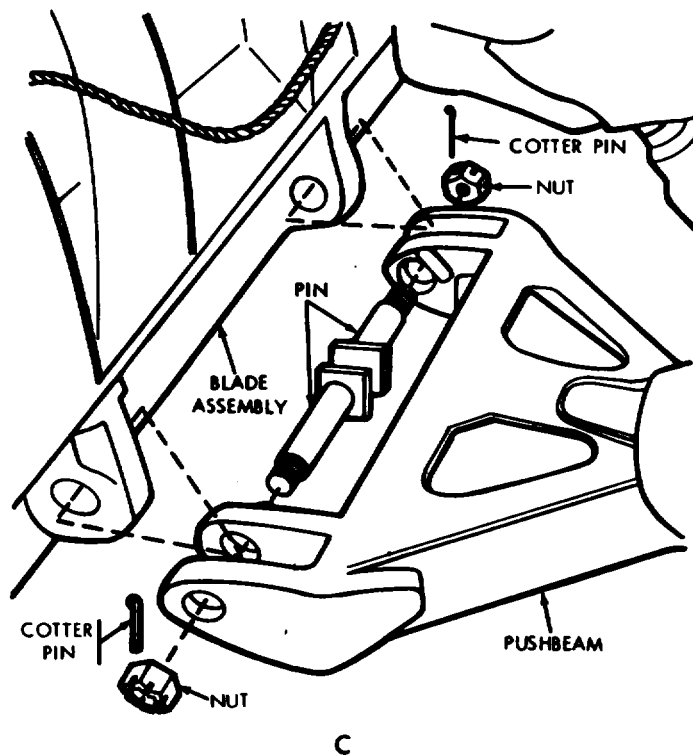
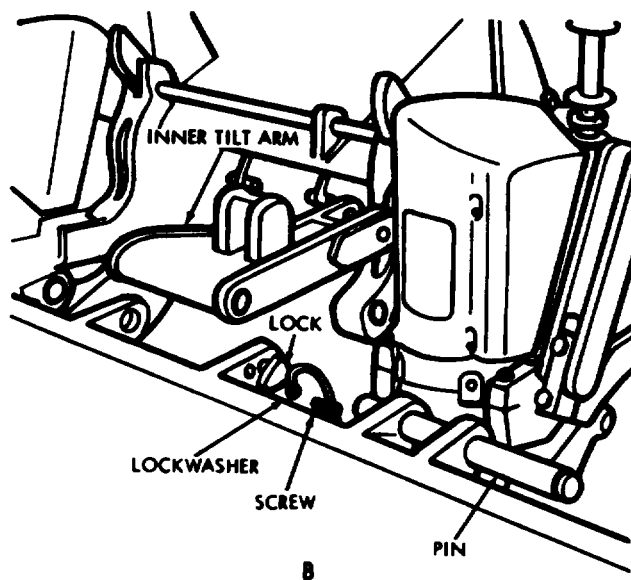
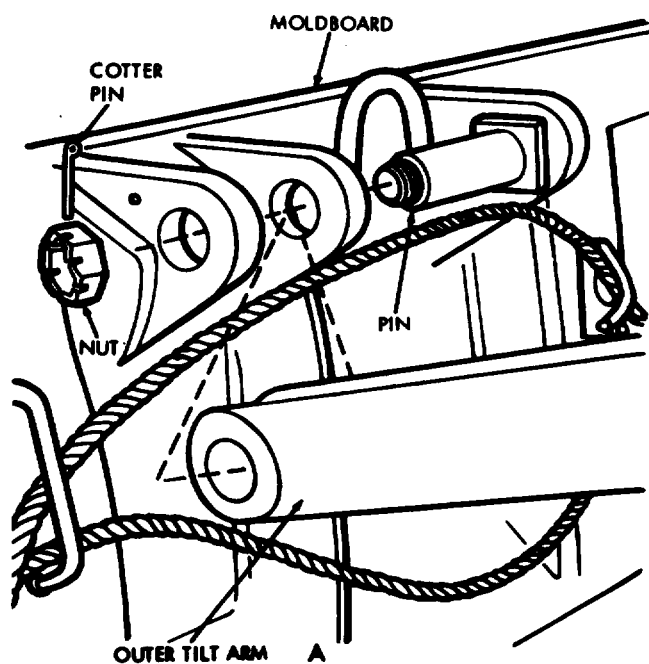


Figure 10-11. Disassembly or assembly of blade assembly.

TA170065

(2) Align and install pushbeam to blade assembly, secure with two pins, nuts, and cotter pins (view C).

(3) Install pushbeam to mounting bracket, and secure with pin, nut, and cotter pin (view B).

(4) Align ram assembly with pushbeam; insert pin, and secure with screw, lockwasher, and lock (view A).

10-25. Maintenance of Tilt Arm.

a. Description. The tilt arms are connected to the blade assembly and the mounting bracket. When the blade assembly is raised, the carrying hooks can be inserted into travel lock securing the blade assembly.

b. Removal (Fig 10-13)

NOTE

Procedures for both left and right sides are the same.

(1) Lower the blade assembly to rest on the ground.

(2) Attach lifting device to inner tilt arm.

CAUTION

Before removing pin, support weight of tilt arm with a suitable jack or wood block.

(3) Remove nut, cotter pin, and pin securing inner tilt arm to mounting bracket (view A).

(4) Attach lifting device to outer tilt arm.

(5) Remove nut, cotter pin, and pin securing outer tilt arm to moldboard assembly, and remove tilt arm (view B).

(6) Remove screw, lockwasher, lock, and pin securing inner tilt arm to blade assembly. Remove inner tilt arm (view C).

(7) Remove two screws, lockwashers, and cap securing outer tilt arm to mounting bracket, and remove outer tilt arm (view D).

c. Cleaning and Inspection.

(1) Clean all parts, including housing mating surfaces, using dry-cleaning solvent.

(2) Inspect all components for cracks or damage.

(3) Inspect machined surfaces for pitting or wear.

(4) Inspect remaining hardware for wear, damaged threads, and general serviceability. Replace components, as required.

d. Installation (Fig 10-13)

NOTE

Procedures for both left and right sides are the same.

(1) Attach lifting device to outer tilt arm.

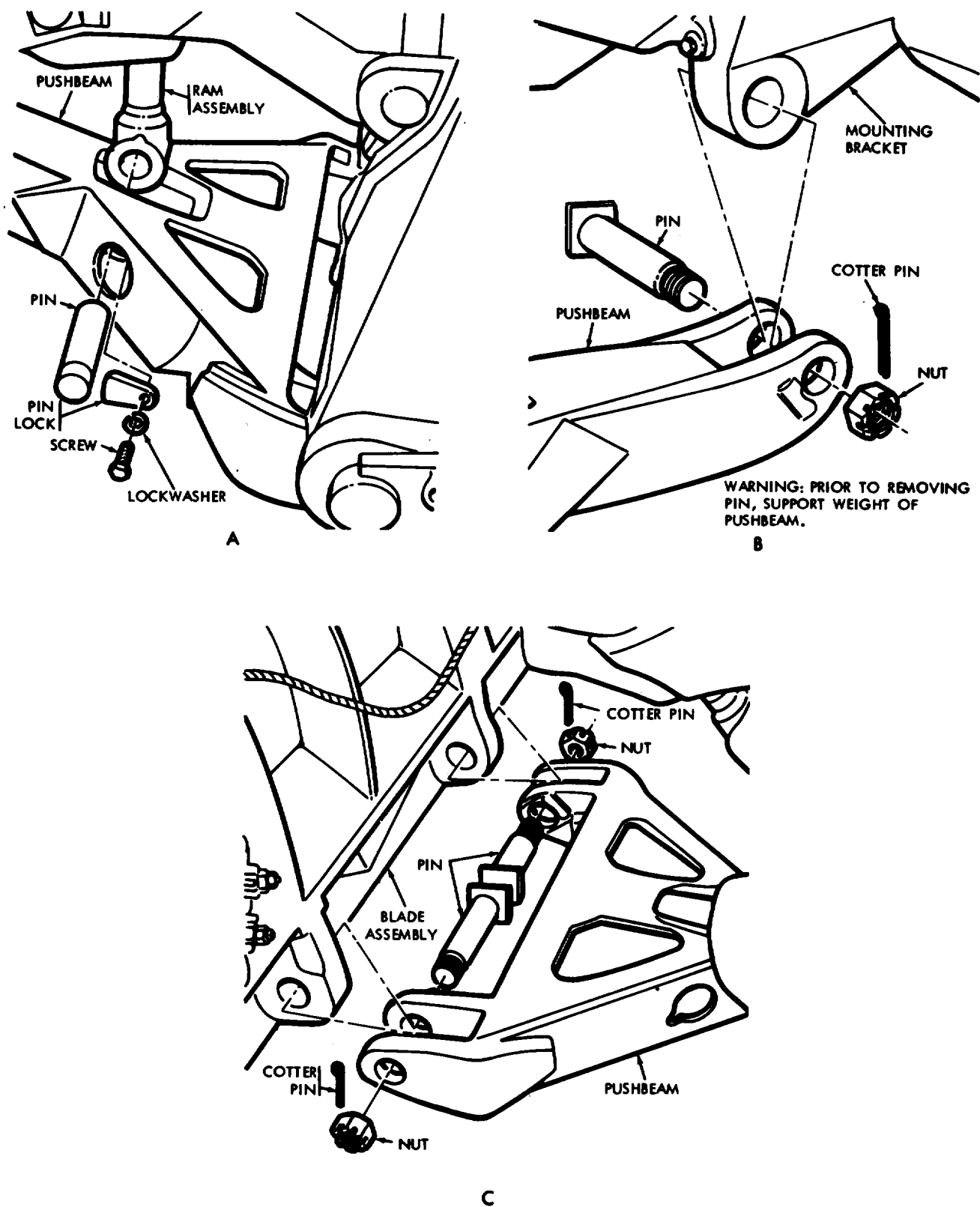
(2) Install outer tilt arm to mounting bracket; position cap, and secure with two screws and lockwashers (view D).

(3) Install inner tilt arm to blade assembly and secure with pin. Position lock on pin, and secure with screw and lockwasher (view C).

(4) Install outer tilt arm to moldboard assembly and secure with pin. Secure pin with nut and cotter pin (view B).

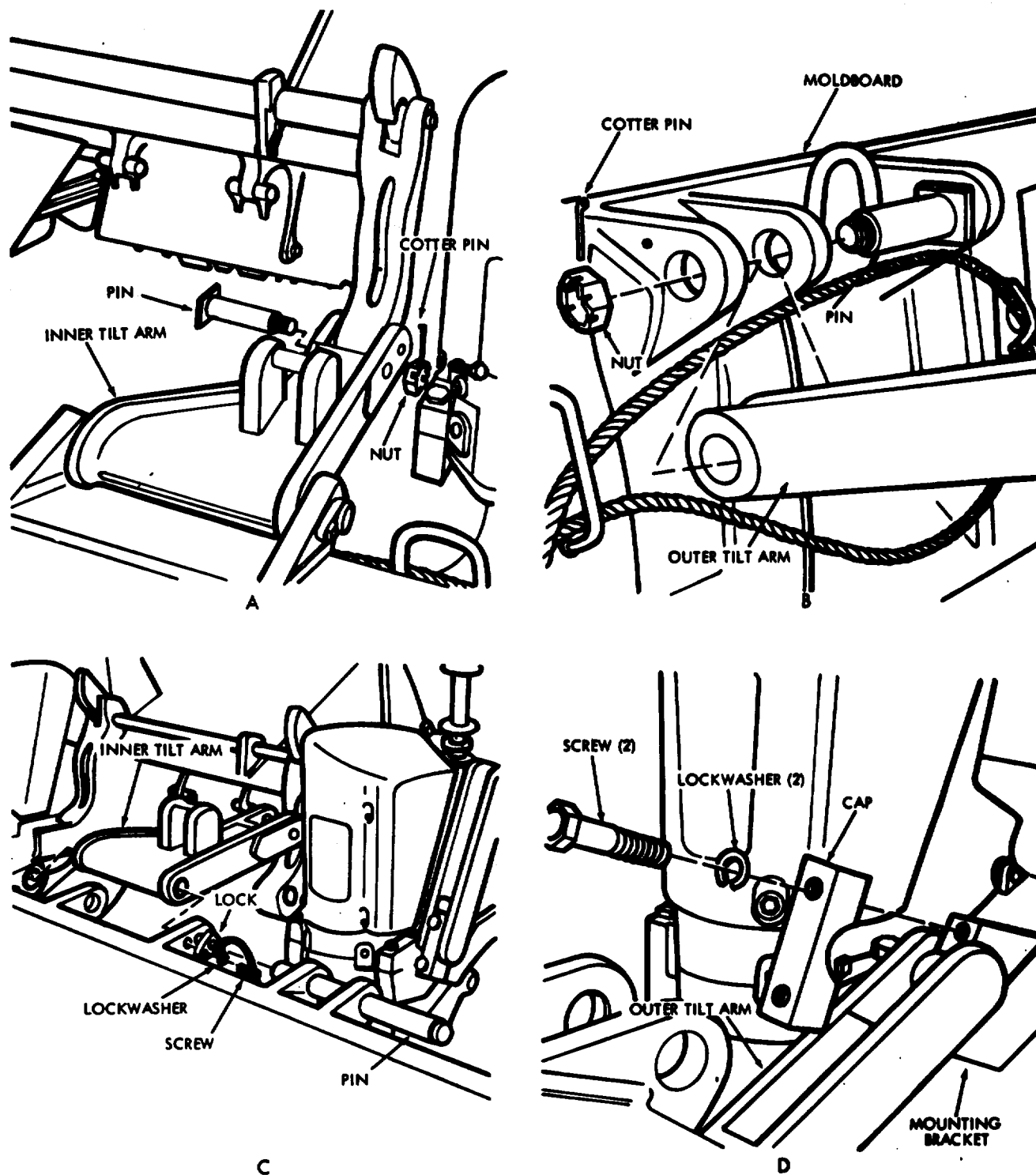
(5) Attach lifting device to inner tilt arm.

(6) Install inner tilt arm to mounting bracket, and secure with pin. Secure pin with nut and cotter pin (view A).



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Figure 10-12. Removal or installation of pushbeam assemblies.



TA170067

Figure 10-13. Removal or installation of tilt arms.

10-26. Maintenance of Reservoir. The oil reservoir is mounted to the left rear fender. Tubing and hoses connect it with the control valve and hydraulic pump. Controlled movement of hydraulic oil in one direction moves the blade assembly up and down. The reservoir also has an air vent line with filter which is vented to the air cleaner.

CAUTION

Do not remove drain plug or disconnect tubes, while engine is running to prevent damage to hydraulic pump.

a. Removal (Fig 10-14).

(1) Disconnect lines carefully to relieve pressure. Drain hydraulic system (fig 4-1).

(2) Remove two screws and lockwashers securing support to upper guard (view A).

(3) Remove five screws and lockwashers securing upper guard to lower guard (view A). Remove upper guard.

(4) Remove two nuts, lockwashers, and washers, securing guard to left rear fender (view A). Remove guard.

(5) Disconnect two seals and tubes connected to elbows (view B).

(6) Remove three screws, lockwashers, and nuts securing lower guard to left rear fender (view C). Remove lower guard.

(7) Remove two hose assemblies from reservoir assembly (view D).

(8) Remove two elbows from hose assemblies (view D).

(9) Remove two nuts, washers, and lockwashers from reservoir assembly (view E).

(10) Attach hoist to reservoir assembly, and remove reservoir assembly (view E).

b. Cleaning and Inspection.

(1) Clean all parts including housing mating surfaces using dry-cleaning solvent.

(2) Inspect all components for cracks or damage.

(3) Inspect machined surfaces for pitting or wear.

(4) Inspect remaining hardware for wear, damaged threads, and general serviceability. Replace components, as required.

c. Disassembly (Fig 10-15).

(1) Remove 14 screws and lockwashers securing cover assembly and gasket to reservoir, and remove cover assembly and gasket (view A).

(2) Remove plug and gage from cover assembly (view B).

(3) Remove four screws and lockwashers securing strainer element to cover assembly, and remove strainer element (view B).

(4) Remove two screws and seals securing manifold assembly inside reservoir, and remove manifold assembly (view C).

(5) Remove three screws, lockwashers, and washers securing baffle to reservoir, and remove baffle (view C).

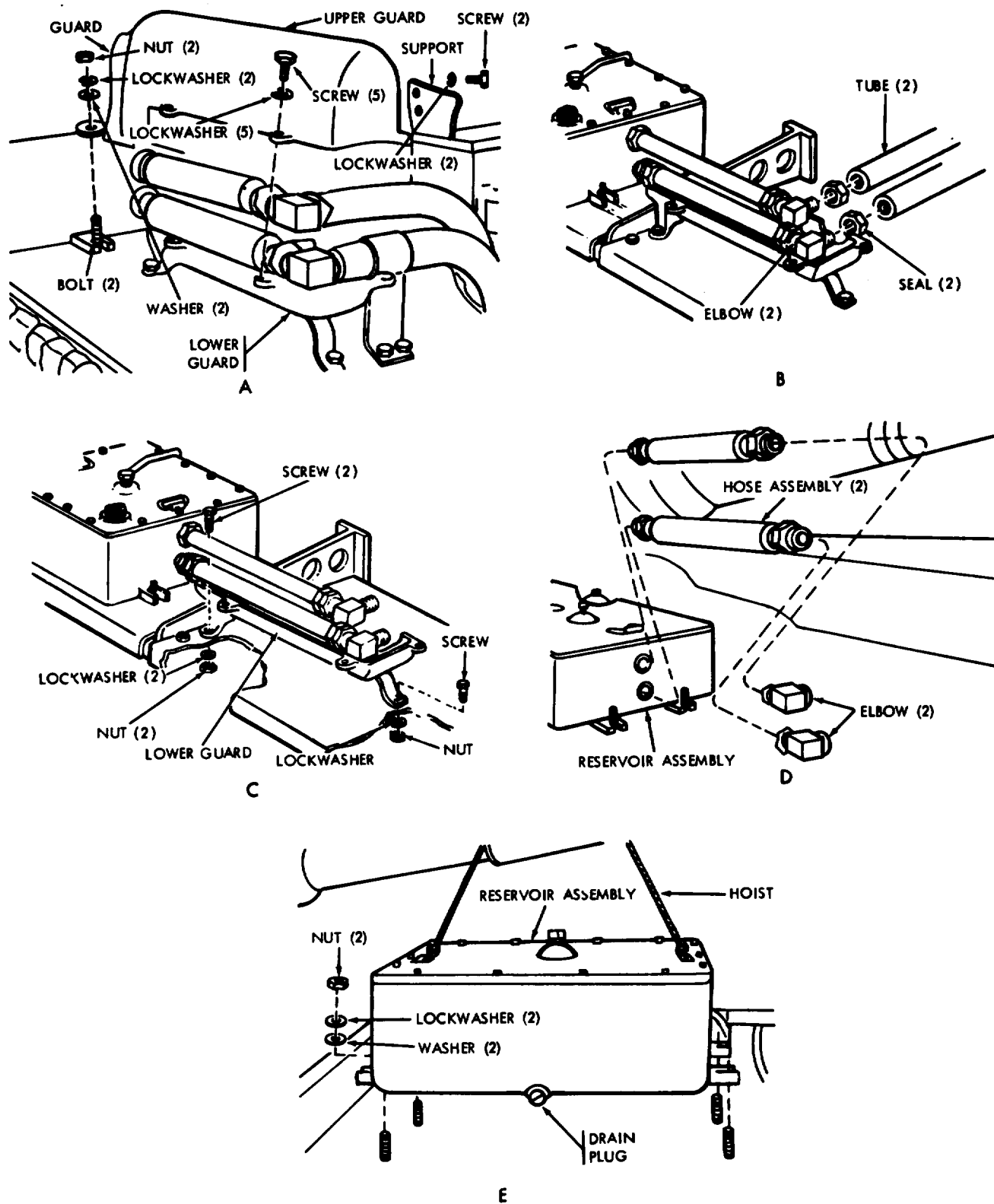
d. Repair (Fig 10-16).

(1) Disconnect two filters from manifold, and remove filters.

(2) Disconnect tube from manifold, and remove tube.

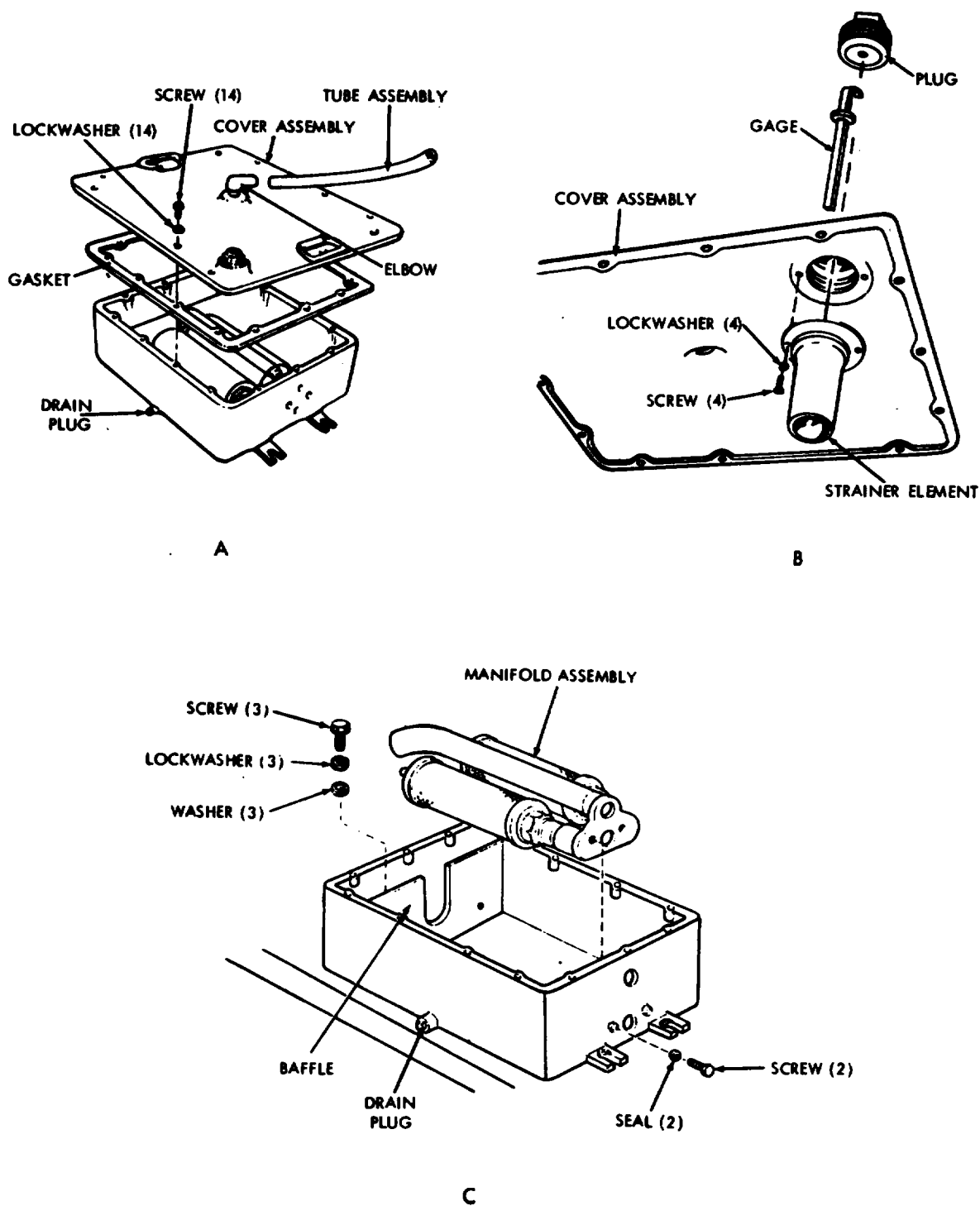
(3) Disconnect two nipples from manifold, and remove nipples.

(4) Clean in accordance with paragraph 5-6.



TA170068

Figure 10-14. Removal or installation of reservoir assembly.



TA170069

Figure 10-15. Disassembly or assembly of reservoir assembly.

- (5) Connect two nipples to manifold.
- (6) Connect tube to manifold.
- (7) Connect two filters to manifold.

e. Assembly (Fig 10-15).

- (1) Install baffle in reservoir, and secure with three screws, lockwashers, and washers (view C).
- (2) Install manifold assembly inside reservoir, and secure with two screws and seals (view C).
- (3) Install strainer element to cover assembly, and secure with four screws and lockwashers (view B).
- (4) Install gage and plug to cover assembly (view B).
- (5) Install gasket and cover assembly on reservoir, and secure with 14 screws and lockwashers (view A).

f. Installation (Fig 10-14).

- (1) Attach hoist to reservoir assembly, and install reservoir assembly on left rear fender (view E).

- (2) Install two nuts and lockwashers securing reservoir assembly to left rear fender (view E).

- (3) Install two elbows to hose assemblies (view D).

- (4) Install two hose assemblies to reservoir assembly (view D).

- (5) Install lower guard to left rear fender, and secure with three screws, lockwashers, and nuts (view C).

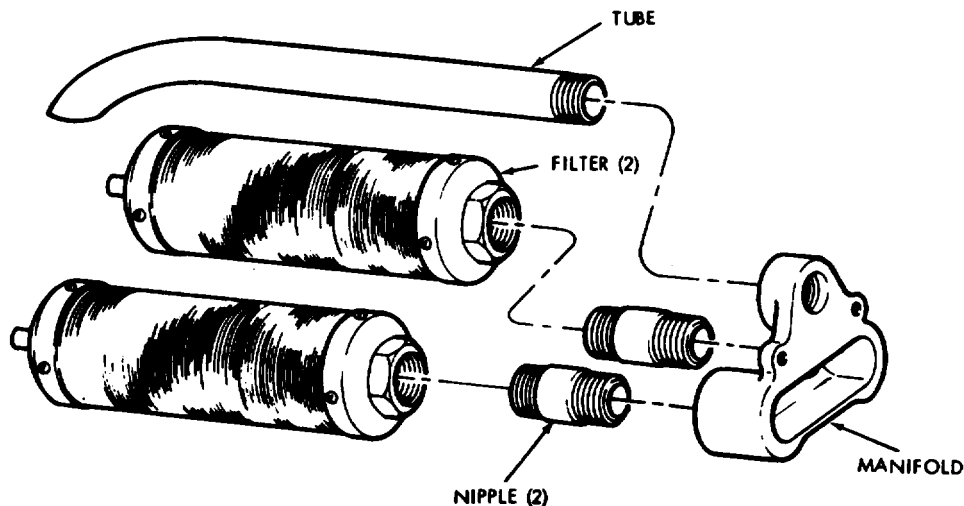
- (6) Connect two seals and tubes to elbows (view B).

- (7) Install guard to left rear fender, and secure with two bolts, lockwashers, washers, and nuts (view A).

- (8) Install upper guard to lower guard and secure with five screws and lockwashers (view A).

- (9) Install support to upper guard, and secure with two screws and lockwashers (view A).

- (10) Fill hydraulic system with oil (fig 3-1)



TA170070

Figure 10-16. Repair of reservoir assembly manifold.

10-27. Maintenance of Hydraulic Pump and Power Takeoff Group.

a. Removal (Fig 10-17).

(1) Open rear grille doors, and remove transmission shroud. See TM 9-2350215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

(2) Drain hydraulic system (fig 10-31).

(3) Disconnect hydraulic tube assemblies from pump.

(4) Remove yoke support bracket and clutch shifting yoke (view A).

(5) Remove four mounting screws and lockwashers securing pump to mount (view B).

(6) Move hydraulic pump to right to separate mechanical clutch assembly (view B).

(7) Remove locknut, adjusting nut, bearing, and mechanical clutch assembly from right-angle drive (view C).

(8) Remove four screws, lockwashers, and washers, and remove right-angle drive and hydraulic pump mounting bracket as a unit with sprocket assembly and gasket (view D).

(9) Remove screws and lockwashers securing mounting bracket to transmission (view D).

(10) Remove three screws, lockwashers, and washers securing right-angle drive assembly to hydraulic pump mounting bracket (view E).

(11) Remove gasket (view E).

b. Installation (Fig 10-17).

(1) Install gasket between right angle drive and hydraulic pump mounting bracket (view E).

(2) Install right-angle drive assembly to hydraulic pump mounting bracket, and secure with three screws, lockwashers, and washers (view E).

(3) Install mounting bracket to transmission, and secure with screws and lockwashers (view D).J.

(4) Install right-angle drive and hydraulic pump mounting bracket as a unit after installing sprocket assembly and positioning gasket, and secure with four screws, lockwashers, and washers (view D).

(5) Install locknut, adjusting nut, bearing, and mechanical clutch assembly to right-angle drive (view C).

(6) Install hydraulic pump to left to connect mechanical clutch assembly (view B).

(7) Position pump on mount and secure with four screws and lockwashers (view B).

(8) Install mechanical clutch yoke support bracket and yoke assembly (view A). Adjust clutch control as required (para 1030).

(9) Connect hydraulic tube assemblies to pump.

(10) Fill hydraulic system (fig 10-7).

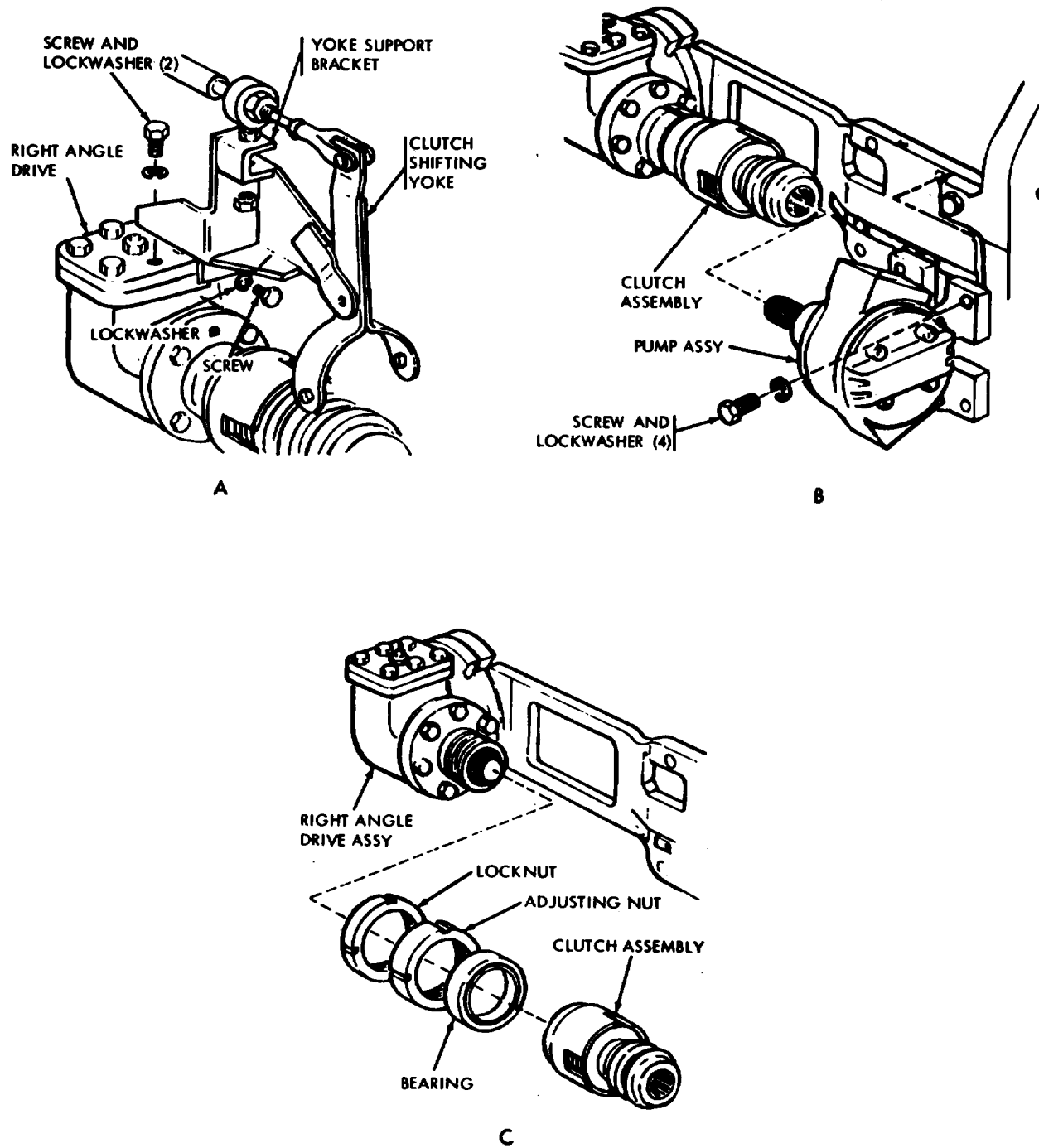
(11) Install transmission shroud, and close grille doors. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

10-28. Maintenance of Hydraulic Mechanical Clutch Support Bracket and Yoke Assembly.

a. Removal (Fig 10-18).

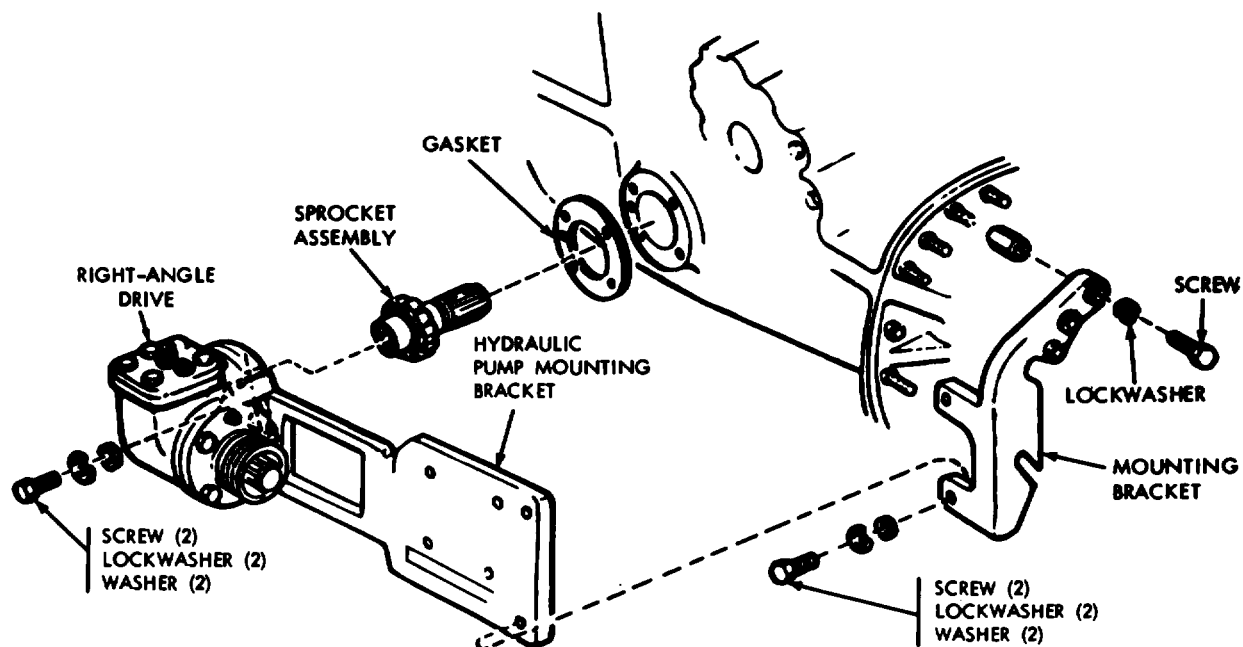
(1) Open rear grille doors, and remove transmission shroud. See TM 9-2350215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

(2) Remove screw, lockwasher, and nut from yoke assembly (view A).

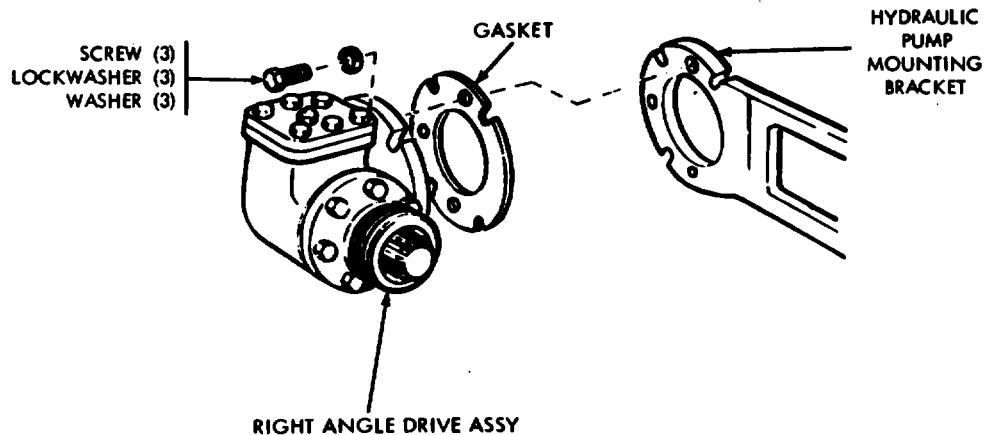


TA170071

Figure 10-17. Removal or installation of hydraulic pump and power takeoff group (early model bulldozer) (sheet 1 of 2).



D



E

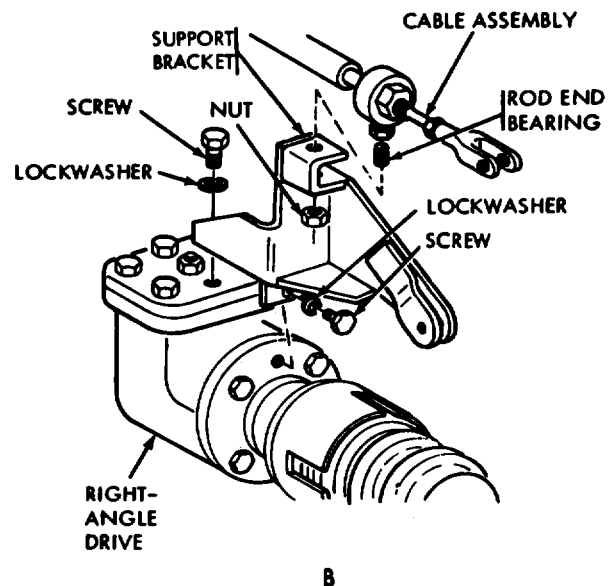
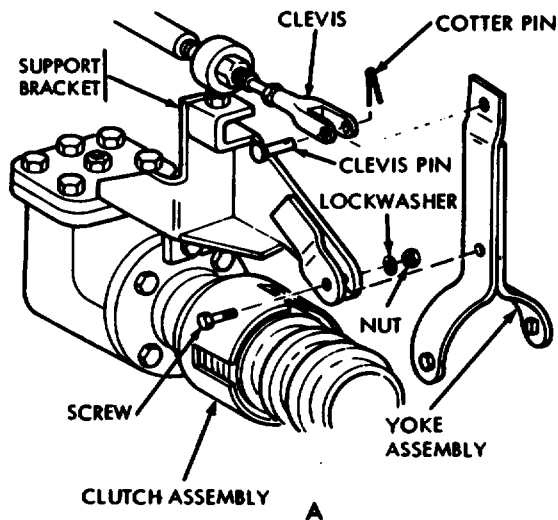
TA170072

Figure 10-17. Removal or installation of hydraulic pump and power takeoff group (early model bulldozer) (sheet 2 of 2).

- (3) Remove cotter pin and clevis pin (view A).
- (4) Remove yoke assembly (view A).
- (5) Remove nut securing rod end bearing from support bracket (view B).
- (6) Remove two screws and lockwashers securing support bracket to right angle drive (view B).
- (7) Remove support bracket (view B).

b. Installation (Fig 10-18).

- (1) Install support bracket (view B).
- (2) Install support bracket to right angle drive, and secure with two screws and lockwashers (view B).
- (3) Install rod end bearing to support bracket, and secure with nut (view B).
- (4) Install yoke assembly (view A).
- (5) Install clevis pin and cotter pin (view A).



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(6) Install yoke assembly and secure with screw, lockwasher, and nut (view A). Adjust clutch control as required (para 10-30).

(7) Install transmission shroud, and close rear grille doors. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

10-29. Maintenance of Mechanical Clutch Control Assembly.

a. Removal (Fig 10-19).

NOTE

If cable is removed power plant must be removed to gain access to cable clamps.

(1) Open rear grille doors, and remove transmission shroud. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

(2) Unscrew handle and housing from cable and bulkhead (view A).

Figure 10-18. Removal or installation of hydraulic mechanical clutch support bracket and yoke assembly.

(3) Remove screw, lockwasher, and clamp (view B).

(4) Remove screw and lockwasher from left fuel tank bracket (view C).

(5) Remove screw and lockwasher from clamp (view C). Remove nut and lockwasher securing clamp (view D).

(6) Remove cotter pin and pin securing cable clevis to yoke (view D).

(7) Remove nut securing cable to support bracket (view D).

b. Installation (Fig 10-19).

NOTE

Install with power plant removed.

(1) Install cable to support bracket, and secure with nut (view D).

(2) Install cable to yoke, and secure with pin and cotter pin (view D).

(3) Install clamp, and secure with screw and lockwasher (view C).

(4) Install clamps, screw, and lockwasher (view B).

(5) Install handle and housing to cable and bulkhead (view A).

(6) Adjust clutch control as required (para 10-30).

(7) Install transmission shroud, and close rear grille doors. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1RISE), or TM 9-2350-253-20-1 (M60A3).

10-30. Adjustment

a. General. The mechanical clutch is a dry, multiple-disk-type clutch. The tighter the disks are when engaged, the more torque is transmitted to drive the

hydraulic pump. The pump requires a constant torque input in ratio to engine drive speed. When the disks wear, they become loose and the necessary power transmission is lost. Mechanical clutch adjustment is then required. Erratic performance of the blade assembly indicates the need for mechanical clutch adjustment.

b. Adjustment of Mechanical Clutch (Fig 10-20).

(1) Disengage clutch.

NOTE

Mechanical clutch must be cool. If mechanical clutch has become heated from slippage, wait until it cools.

(2) Disconnect control cable from yoke (fig 10-19).

(3) Lift lock spring with mechanical clutch adjusting tool (table 10-1). Refer to figure 10-20.

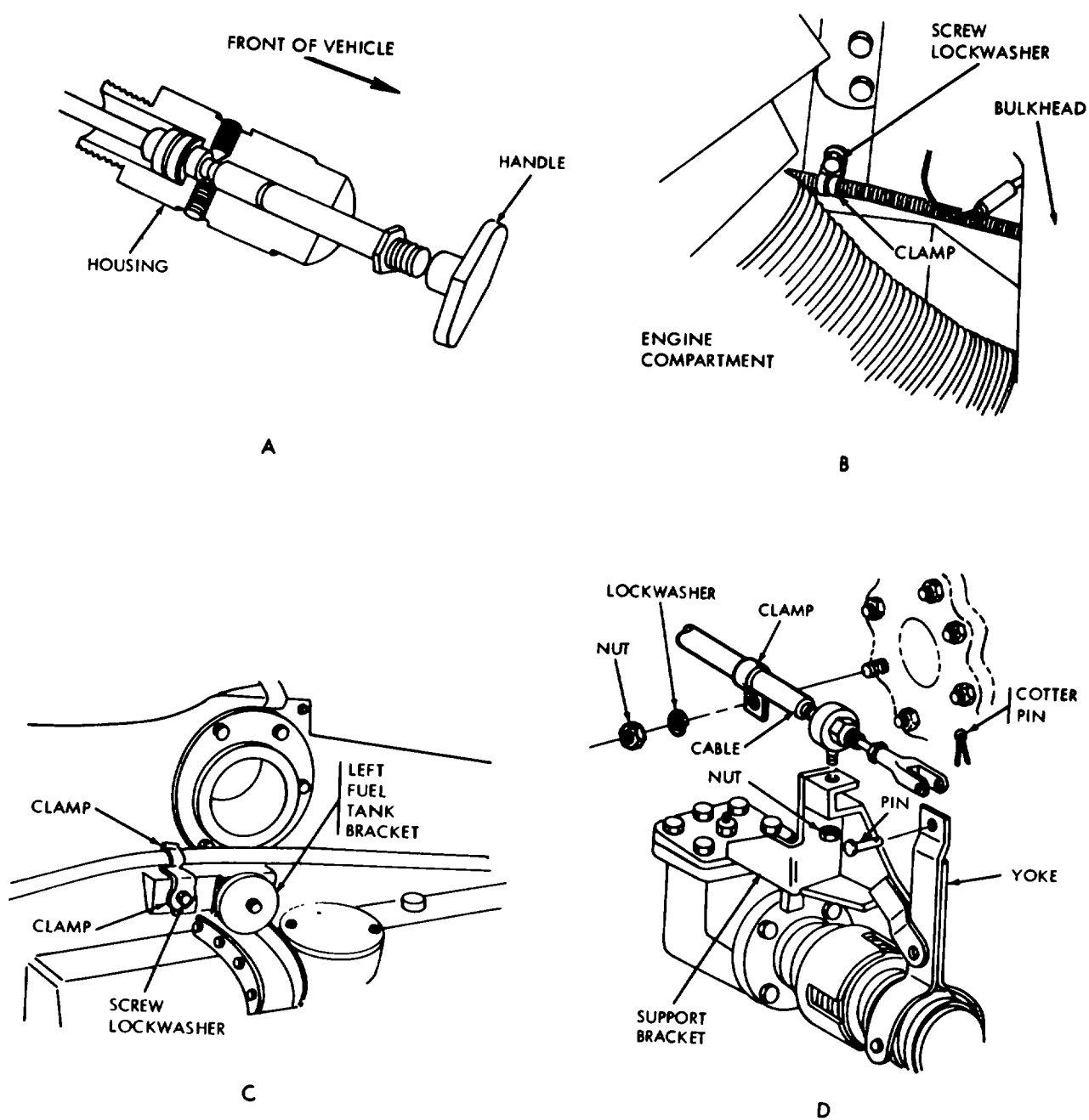
(4) Turn clutch collar clockwise two to four notches to tighten.

(5) Place yoke in engaged position. Start engine and raise and lower blade assembly. The blade assembly should raise and lower with a steady (not erratic) movement.

(6) Lower the blade assembly so that it is supporting the weight of the vehicle. Blade assembly should support the vehicle weight without any sign of erratic operation. If it does not, tighten mechanical clutch another two to four notches and repeat the above tests. When satisfactory operation is attained, adjust control linkage as outlined in step c.

c. Adjustment of Mechanical Clutch Control Linkage.

(1) Set mechanical clutch control cable in disengaged detent position (handle in) and position shifting yoke so that there is 0.010 inch clearance between dogs and clutch collar.



TA170074

Figure 10-19. Removal or installation of mechanical clutch control assembly (early model bulldozer)

(2) Lengthen or shorten cable by screwing clevis in or out until holes in clevis align with hole in yoke arm.

(3) Install clevis pin and secure with cotter pin.

(4) Check operation of control cable and yoke to make certain that when in disengage detent position there is a 0.010 inch clearance of the dogs and that when in the disengaged detent position (handle in) that the mechanical clutch is fully engaged.

10-31. Maintenance of Cylinder Assembly Guards.

a. Description (Fig 10-21). Each cylinder assembly is protected by a top guard, bottom guard, front guard, and a rear guard. The guards are secured to the cylinder mounting brackets by screws, washers, and lockwashers. The installed guards are designed to protect the cylinders from damage by brush, rocks, and debris.

b. Removal (Fig 10-21).

NOTE

Procedures for both left and right sides are the same.

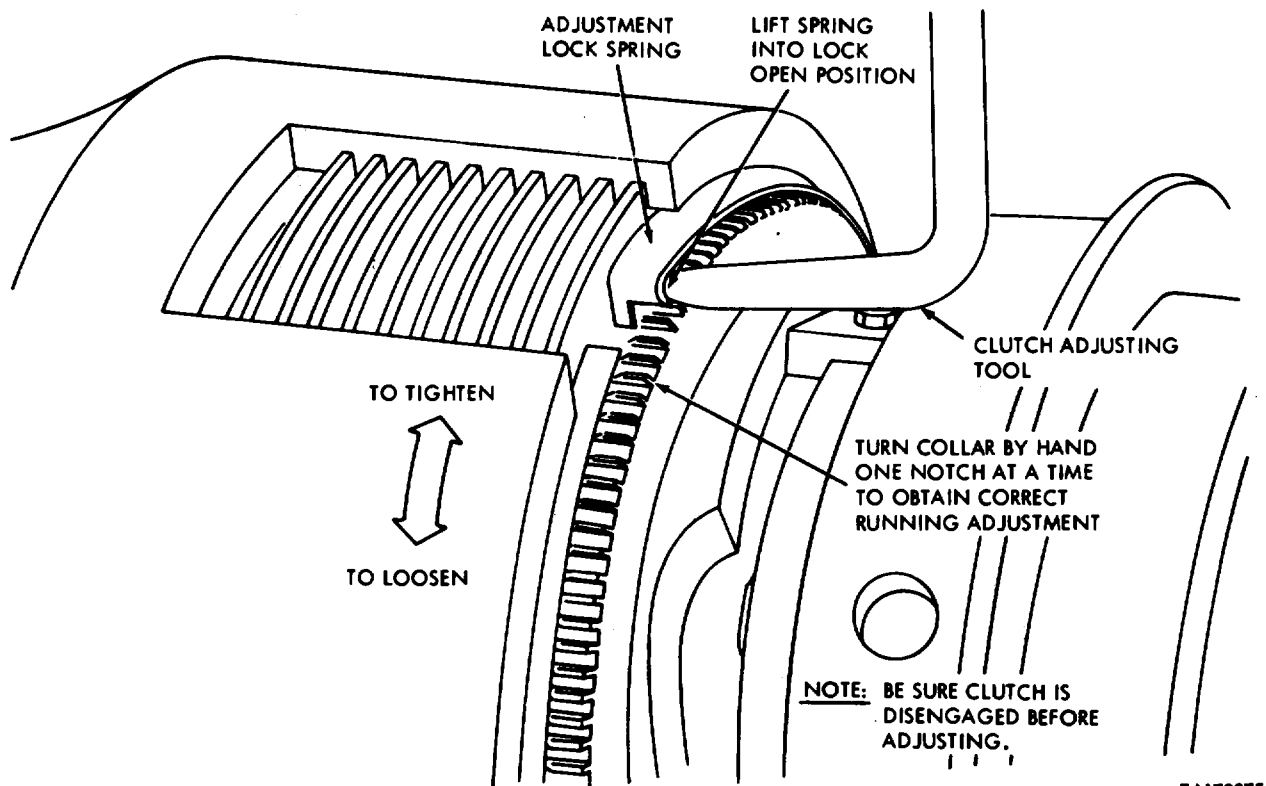
(1) Remove four screws securing top guard to rear guard (view A).

(2) Remove four screws, washers, and lockwashers securing top guard to front guard. Remove top guard (view B).

(3) Remove two screws, washers, and lockwashers and remove front guard (view B).

(4) Remove four screws, washers, and lockwashers and remove rear guard (view C).

(5) Remove four screws and lockwashers and remove lower guard and two spacers (view D).



TA170075

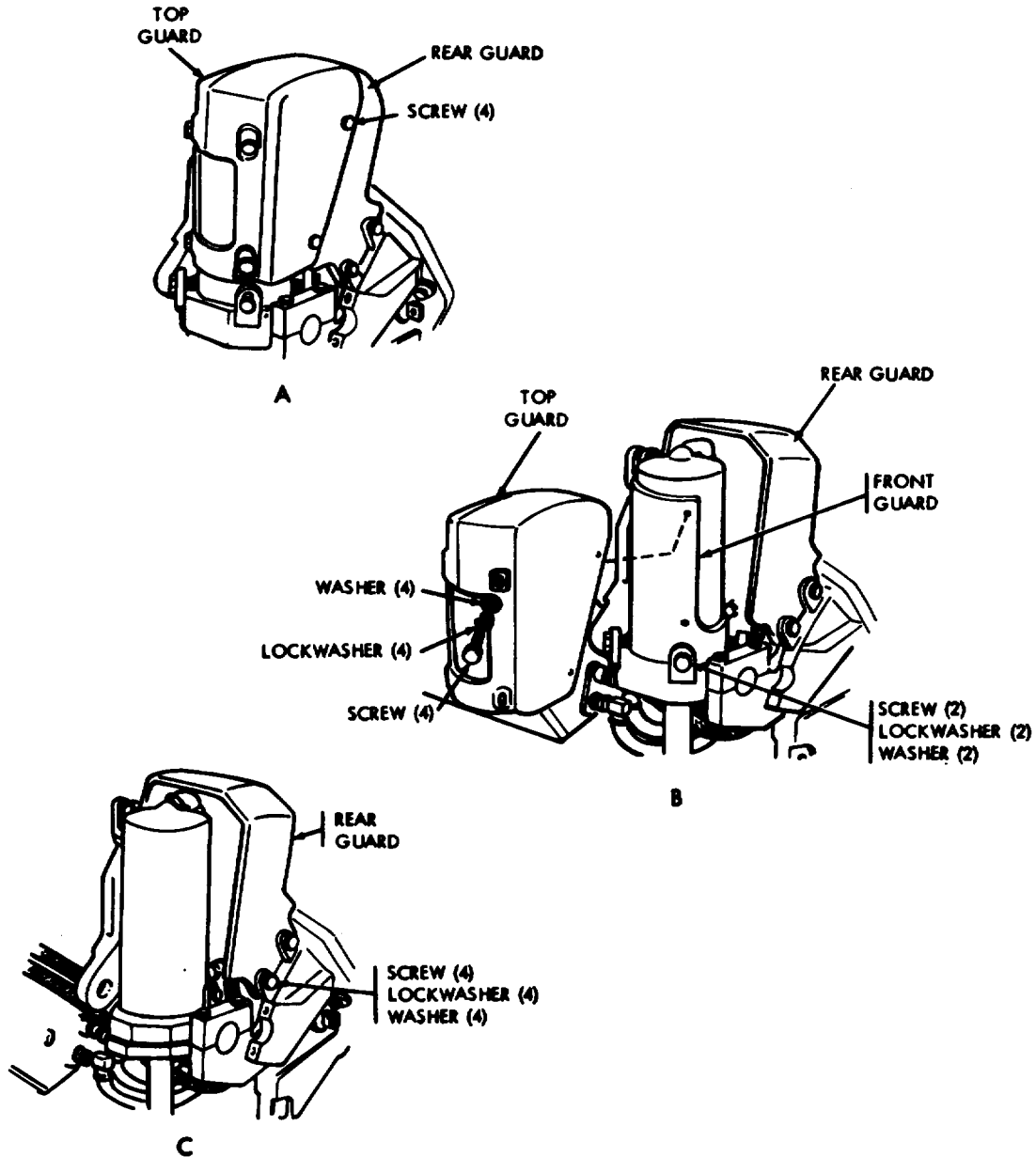
Figure 10-20. Mechanical clutch adjustment (early model bulldozer).

c. *Cleaning.* Clean all parts with dry-cleaning solvent. Be sure that all old lubricants and foreign materials are removed.

d. *Inspection.* Inspect surfaces for cracks, breaks, nicks, or burrs. Check for missing mounting hardware.

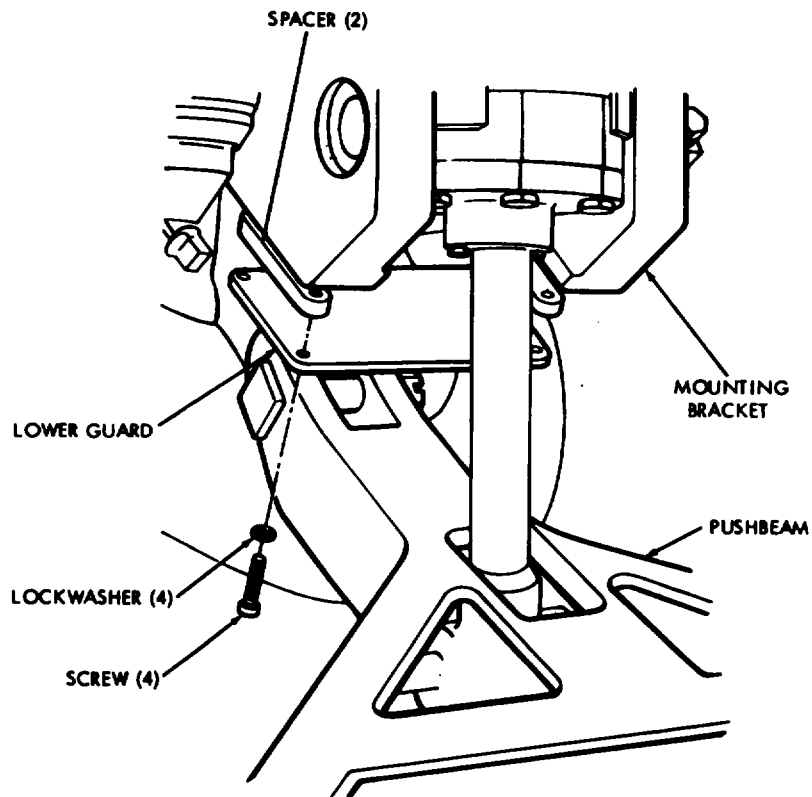
e. *Installation (Fig 10-21).*

(1) Position two spacers between lower guard and cylinder mounting bracket and secure guard and spacers to mounting bracket with four screws and lockwashers (view D).



TA170076

Figure 10-21. Removal or installation of cylinder guards (sheet 1 of 2).



D

TA170077

Figure 10-21. Removal or installation of cylinder guards (sheet 2 of 2).

(2) Secure rear guard to cylinder mounting bracket with four screws, washers, and lockwashers (view C).

(3) Secure front guard to cylinder mounting bracket with two screws, washers, and lockwashers (view B).

(4) Secure top guard to front guard with four screws, washers, and lockwashers (view B).

(5) Secure top guard to rear guard with four screws (view A).

10-32. Maintenance of Hydraulic Cylinder Assembly.

a. Description. The hydraulic cylinder assemblies are connected to the mounting brackets at the front of the vehicle, and operate the pushbeams in an up-and-down motion. Hydraulic oil flow to the cylinder assemblies is through hose assemblies that are attached to the manifold control valve. Armored guards protect the cylinders and hoses.

CAUTION

Do not remove drain plugs or disconnect tubes, while vehicle engine is running to prevent damage to hydraulic pump.

b. Removal (Fig 10-22).

NOTE

Procedures for both left and right sides are the same.

(1) Disconnect lines carefully to relieve pressure and drain hydraulic system (fig 4-1).

(2) Remove four screws securing top guard (view A, fig 10-22).

(3) Remove four screws, lockwashers, and washers securing top guard to front guard, and remove top guard (view B).

(4) Remove two screws, lockwashers, and washers securing front guard, and remove front guard (view B).

(5) Remove four screws, lockwashers, and washers securing rear guard, and remove rear guard (view C).

(6) Remove four screws and lockwashers securing two caps to mounting bracket, and remove caps (view D).

NOTE

Take care when loosening or tightening hose to avoid damage by twisting and turning.

(7) Disconnect two hose assemblies from cylinder assembly (view E).

(8) Disconnect elbow and reducer from top of cylinder assembly (view E).

(9) Disconnect elbow, seal assembly, elbow, two nipples, elbow, and reducer from bottom of cylinder assembly (view E).

(10) Remove screw, lockwasher, and lock securing pin to pushbeam and ram assembly; remove pin (view F).

(11) Remove cylinder assembly from mounting bracket (view F).

c. Cleaning. Clean all parts with drycleaning solvent.

Be sure that all the old lubricants and foreign materials are removed from the lubrication ptss, ges.

d. Inspection. Inspect surfaces for cracks, breaks, nicks or burrs, and replace if necessary. Polish accessible machined surfaces with crocus cloth and then wash with drycleaning solvent.

e. Installation (Fig 10-22).

NOTE

Procedures for both left and right sides are the same.

(1) Position cylinder assembly on mounting bracket (view F).

(2) Install pin securing pushbeam to ram assembly; secure with screw, lockwasher, and lock (view F).

(3) Connect reducer, elbow, two nipples, elbow, seal assembly, and elbow to bottom of cylinder assembly (view E).

(4) Connect reducer and elbow to top of cylinder assembly (view E).

(5) Connect two hose assemblies to cylinder assembly (view E).

(6) Install two caps to mounting bracket, and secure with four screws and lockwashers (view D).

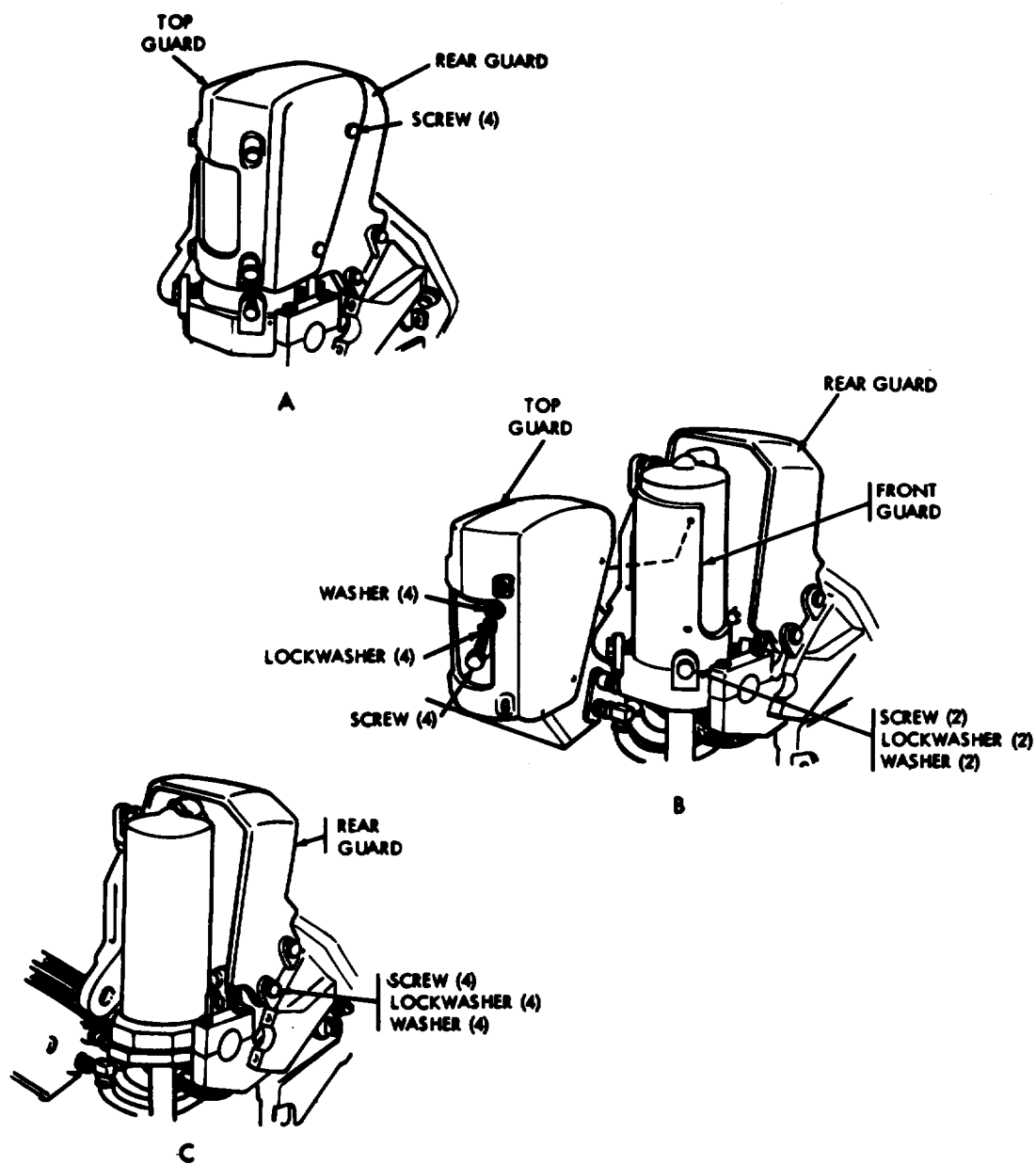
(7) Install rear guard, and secure with four screws, lockwashers, and washers (view C).

(8) Install front guard, and secure with two screws, lockwashers, and washers (view B).

(9) Install top guard, and secure with four screws, lockwashers, and washers (view B).

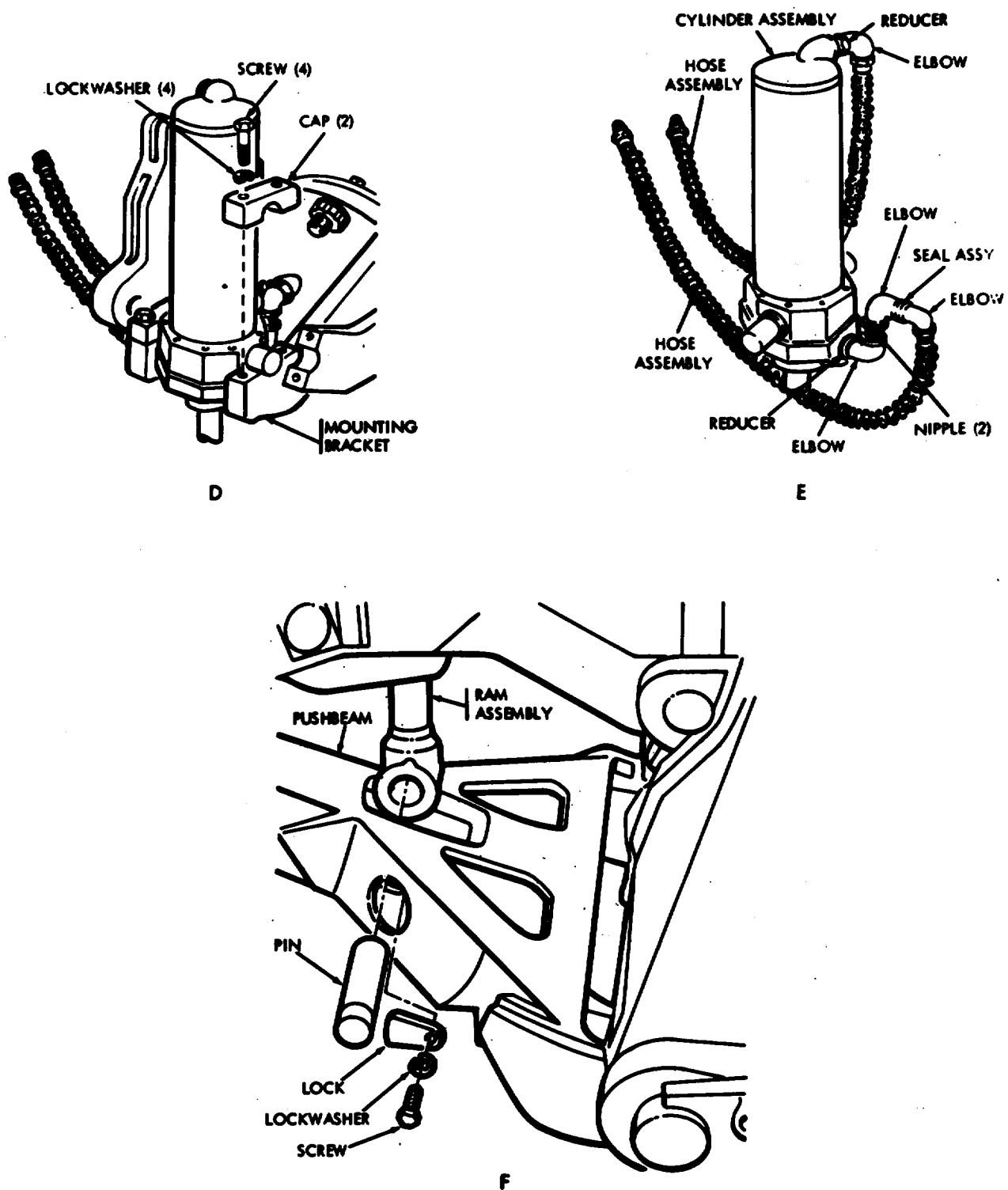
(10) Install four screws securing top guard (view A).

(11) Fill hydraulic system (fig 3-1).



TA170078

Figure 10-22. Removal or installation of cylinder assembly (sheet 1 of 2).



TA170079

Figure 10-22. Removal or installation of cylinder assembly (sheet 2 of 2).

10-33. Maintenance of Blade Assembly Carrying Hooks and Shafts.

a. Description. Two carrying hooks hold blade assembly in raised position for vehicle travel. The hooks are manually operated from outside the driver's compartment. Pushing on handle disengages hooks, and pulling on handle engages hooks.

b. Removal (Fig 10-23).

- (1) Lower blade assembly to ground.
- (2) Remove cotter pin and retaining pin securing clevis to arm, and remove clevis (view C).
- (3) Remove clevis and jam nut from handle assembly and remove handle from support (view C).
- (4) Remove setscrew and nut securing left carrying hook to shaft and mounting bracket (view A).
- (5) Remove setscrew and nut securing right carrying hook to shaft and mounting bracket (view B).
- (6) Remove two bolts and nuts and remove center portion of shaft (views A and B).
- (7) Remove end portions of shafts from mounting brackets, and remove left and right carrying hooks (views A and B).
- (8) Remove screw, lockwasher, and key securing arm to shaft, and remove arm (view D).

c. Cleaning and Inspection.

- (1) Clean all parts using dry-cleaning solvent.
- (2) Inspect all components for cracks or damage.

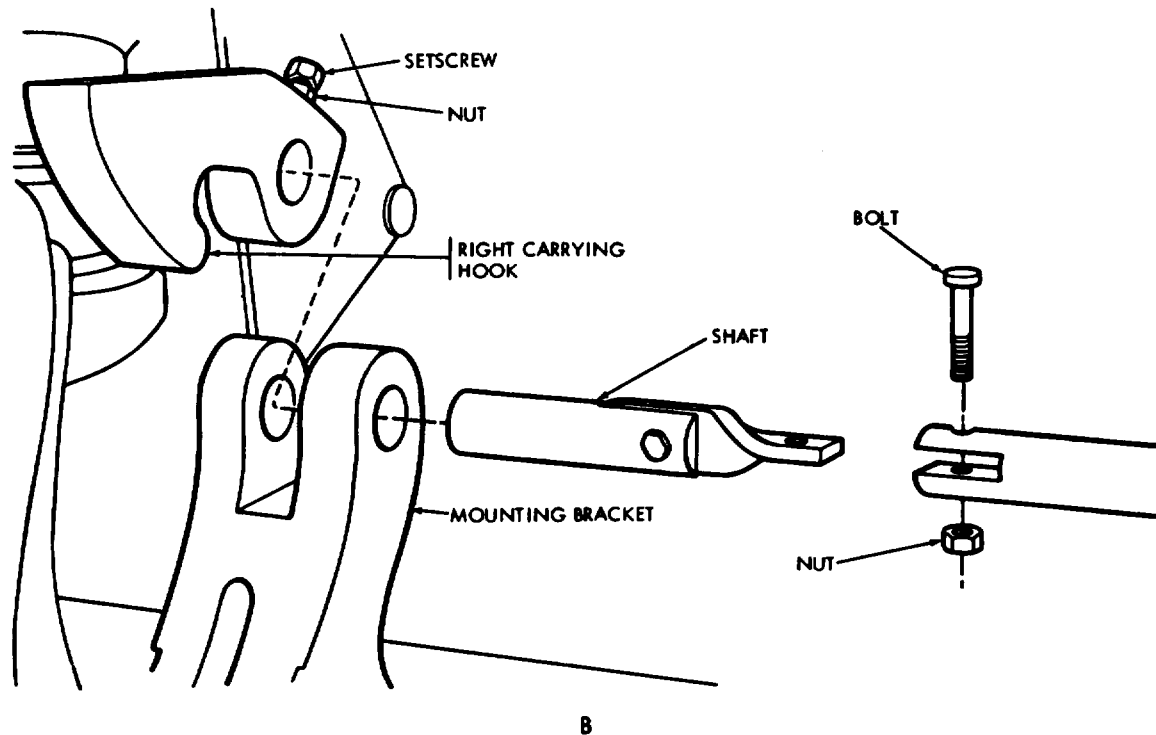
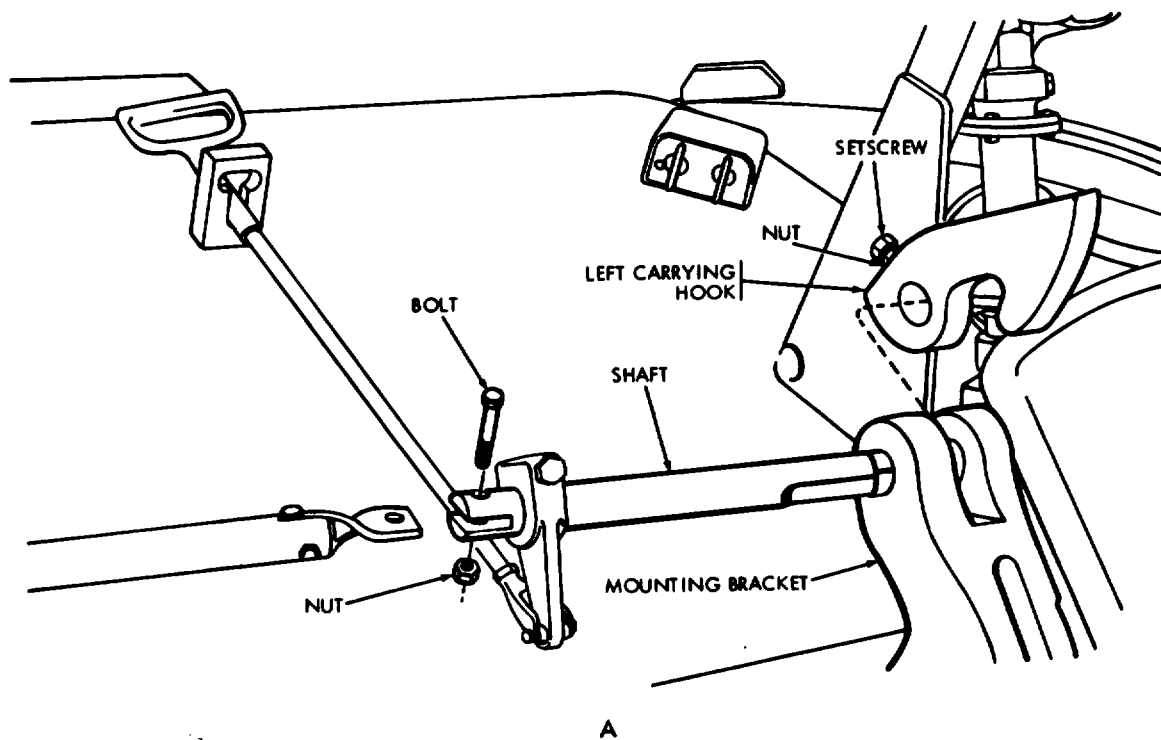
(3) Inspect machined surfaces for pitting or wear.

(4) Inspect remaining hardware for wear, damaged threads, and general serviceability. Replace components, as required.

d. Installation (Fig 10-23).

- (1) Install arm to left portion of shaft, and secure with screw, lockwasher, and key (view D).
- (2) Install left carrying hook to shaft and mounting bracket (view A).
- (3) Insert right portion of shaft through mounting bracket and carrying hook, and secure center portion of shaft to end portions with two bolts and nuts (views A and B).
- (4) Secure right carrying hook to shaft and mounting bracket with setscrew and nut (view B).
- (5) Install handle assembly through support (view C).
- (6) Install clevis and jam nut to handle assembly (view C).
- (7) Install clevis to arm, and secure retaining pin and cotter pin (view C).

10-34. Troubleshooting. Troubleshooting of the early model M9 bulldozer is limited to correcting unsatisfactory operation of the mechanical clutch control. The malfunction and the steps of the troubleshooting procedure are contained in table 10-4.



TA170080

Figure 10-23. Removal or installation of carrying hooks and shafts (sheet 1 of 2).

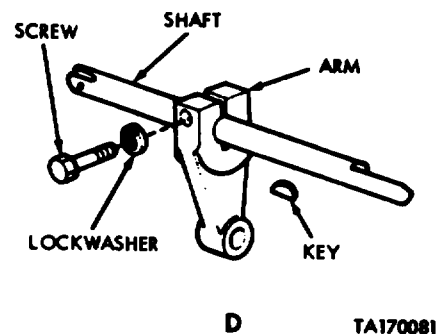
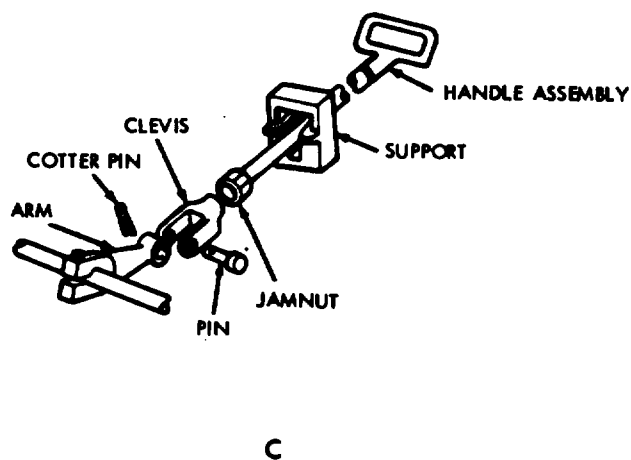


Figure 10-23. Removal or installation of carrying hooks and shafts (sheet 2 of 2).

Table 10-4. Troubleshooting (Early Model Bulldozer)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION
MECHANICAL CLUTCH CONTROL
ERRATIC BLADE ASSEMBLY MOVEMENT
Step 1. Determine if mechanical clutch is out of adjustment.
Adjust mechanical clutch (para 10-30).
Step 2. Determine if mechanical clutch control linkage is binding, distorted, or damaged.
Lubricate control linkage with a light coat of GAA grease. Repair or replace all damaged or distorted parts of control linkage.

Section VII. REPAIR INSTRUCTIONS

10-35. General. This section contains information for direct support and general support maintenance for early model M9 bulldozer. The instructions contain information on equipment that is beyond the scope of tools, equipment, personnel, or supplies normally available to organizational maintenance.

10-36. Repair of Mechanical Clutch Assembly.

a. Removal. Refer to paragraph 10-27.

b. Disassembly. For disassembly of mechanical clutch assembly and related components, refer to figure 10-24 and proceed as follows:

(1) Relieve spring setting by lifting adjustment lock spring (para 10-30), and turn adjustment collar to its lowest point.

(2) Drive out anchor pin (1, fig 10-24) using untapped flatnose punch.

(3) Remove from shaft the parts shown in figure 10-24.

c. Cleaning. Refer to paragraph 5-5 for cleaning instructions.

d. Inspection. Check the components for wear limits as specified in table 10-5.

e. Assembly.

(1) Tap three keys (5) into slots in shaft (19). Keys should fit tightly and not rock. When installing new keys, grind lightly, if necessary, to obtain proper fit.

(2) Fit two split rings (6) into groove in shaft (19).

(3) Slide pressure plate (9) onto shaft (19) and over the keys (5) and split rings (6).

NOTE

When installing pressure plate, counterbore of plate must face rings, so that the plate fits over the rings.

(4) Stack disks (10 and 11) in the order indicated in figure 10-24; align key slots of inner disks so they will slip over the keys (5), and slide onto shaft.

(5) Install adjustment lock spring (7) into the two notches on thrust plate (12), and slide plate onto shaft (19).

(6) Slide adjustment collar (8) onto shaft.

(7) Install three pawls (4) and pin (1) on clutch body (3).

(8) Slide shifter sleeve onto clutch body, install on shaft, and secure to shaft with anchor pin.

10-37. Repair of Blade Assembly Cylinder and Ram.

a. Removal. Refer to paragraph 10-32.

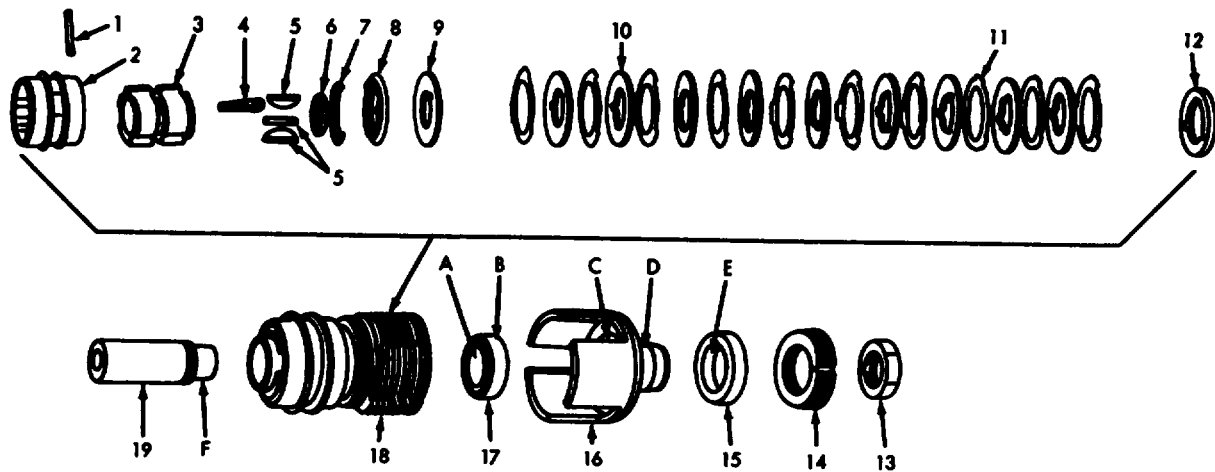
b. Disassembly. For disassembly of the blade assembly cylinder and ram, refer to figure 10-25 and proceed as follows:

(1) Remove eight screws and washers (13 and 12) from head (11).

(2) Slide cylinder (1) from piston assembly.

(3) Remove preformed packing (10) from groove in cylinder (1).

(4) Remove cotter pin (2) from nut (3), and remove nut from rod (18).



TA170082

- | | |
|------------------|--------------------|
| 1 Pin | 11 Disk (outer) |
| 2 Sleeve | 12 Thrust plate |
| 3 Clutch body | 13 Locknut |
| 4 Pawl (3) | 14 Nut |
| 5 Key (3) | 15 Bearing |
| 6 Split ring (2) | 16 Clutch half |
| 7 Lock spring | 17 Bearing |
| 8 Collar | 18 Clutch assembly |
| 9 Pressure plate | 19 Shaft |
| 10 Disk (inner) | |

Figure 10-24. Disassembly or assembly of mechanical clutch assembly and related components (early model bulldozer).

(5) Remove washer (4) and piston (6) from rod (18).

(6) Separate preformed packing (5) from piston (6).

(7) Remove packing assembly (7) from piston (8).

(8) Slide piston (8) from rod (18).

(9) Remove washer (9) from roil (18).

(10) Slide rod (18) from head (11).

(11) Remove two screws (17) from head (11).

(12) Remove retainer (15) and packing assembly (14) from head (11).

(13) Remove packing set (14) from retainer (15).

(14) Remove threaded head (19) and seal (16) from piston rod (18).

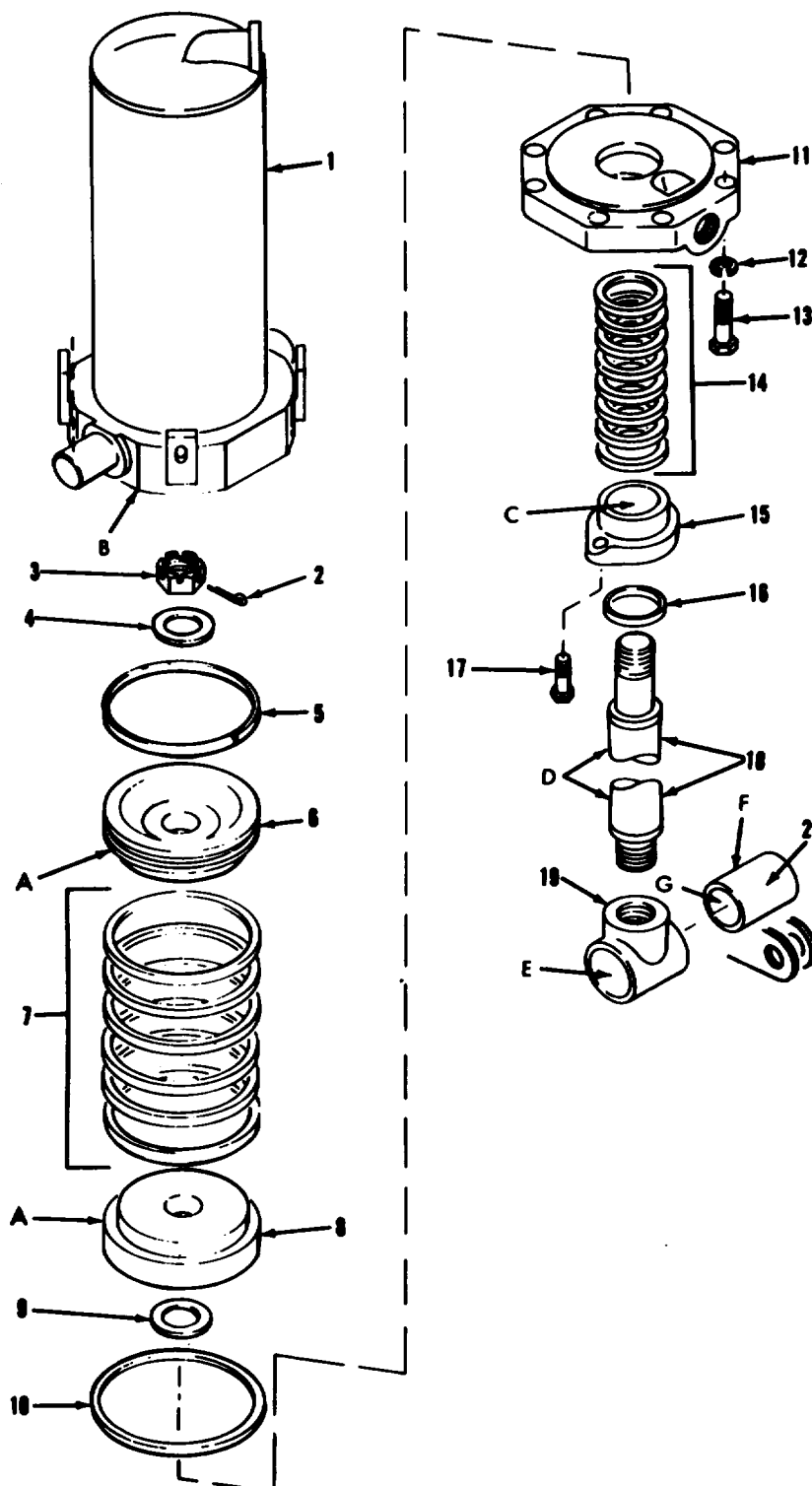
(15) Drive two bushings (20) from ram head (19)

Table 10-5. Repair Standards for Mechanical Clutch and Related Components (Early Model Bulldozer).

Fig. No	Ref. Letter	Point of Measurement	Wear Limits
10-24	A	ID of Bearing	1.3775 to 1.3780
10-24	B	OD of Bearing	2.8341 to 2.8346
10-24	C	ID of Bearing Recess in Spider	2.8346 to 2.8334
10-24	B-C	Fit of Bearing	0.0000 to 0.0007 T
10-24	D	OD of Spider Spindle	1.9686 to 1.9690
10-24	E	ID of Bearing	1.9680 to 1.9685
10-24	F	OD of Shaft	1.3770 to 1.3776
10-24	A-F	Fit of Shaft in Bearing	0.0001T to 0.001L
10-24	D-E	Fit of Spindle in Bearing	0.0001T to 0.001T

Legend for figure 10-25:

1. Cylinder
2. Cotter pin
3. Nut
4. Washer
5. Preformed packing
6. Piston
7. Packing assembly
8. Piston
9. Washer
10. Preformed packing
11. Head
12. Lockwasher (8)
13. Screw (8)
14. Packing assembly
15. Retainer
16. Seal
17. Screw (2)
18. Rod
19. Head
20. Bushing (2)



TA170083

Figure 10-25. Disassembly or assembly of blade assembly cylinder and ram.

Table 10-6. Repair Standards for Blade Assembly**Cylinder and Ram**

Fig. No	Ref. Letter	Point of Measurement	Wear Limits
10-25	A	OD of piston	6.9740
10-25	B	ID of cylinder bore	7.021
10-25	C	ID of packing retainer	2.507
10-25	D	OD of piston rod	2.497
10-25	E	ID of ram head bore	2.375 to 2.376
10-25	F	OD of bushing	2.377 to 3.379
10-25	G	ID of bushing	2.006

c. Cleaning. Refer to paragraph 5-5 for cleaning instructions.

d. Inspection. Check the components for wear limit as specified in table 10-6.

e. Assembly. For assembly of the blade assembly cylinder and ram, refer to figure 10-25 and proceed as follows:

(1) During assembly, replace preformed packing, seals, and/or all worn or deformed parts with new parts.

(2) Install two bushings (20) in head (19).

(3) Connect threaded head (19) to rod (18).

(4) Install packing assembly (14) into internal bore of head (11).

(5) Using two screws (17), secure retainer (15) to head (11).

(6) Install seal (16) in retainer (15).

(7) Slide piston rod (18) into head (11) bore.

(8) Slide washer (9) over rod (18).

(9) Install piston (8) on rod (18).

(10) Install packing assembly (7) on piston (8).

(11) Install preformed packing (5) on piston (6). Install piston (6) on rod (18) to mate with packing set (7).

(12) Install washer (4) and nut (3) on rod (18) and secure with cotter pin (2).

(13) Install preformed packing (10) in cylinder (1).

(14) Slide piston assembly into cylinder (1).

(15) Install eight washers and screws (12 and 13) to secure head (11) to cylinder (1).

f. Test. To test the hydraulic cylinder and ram, proceed as follows:

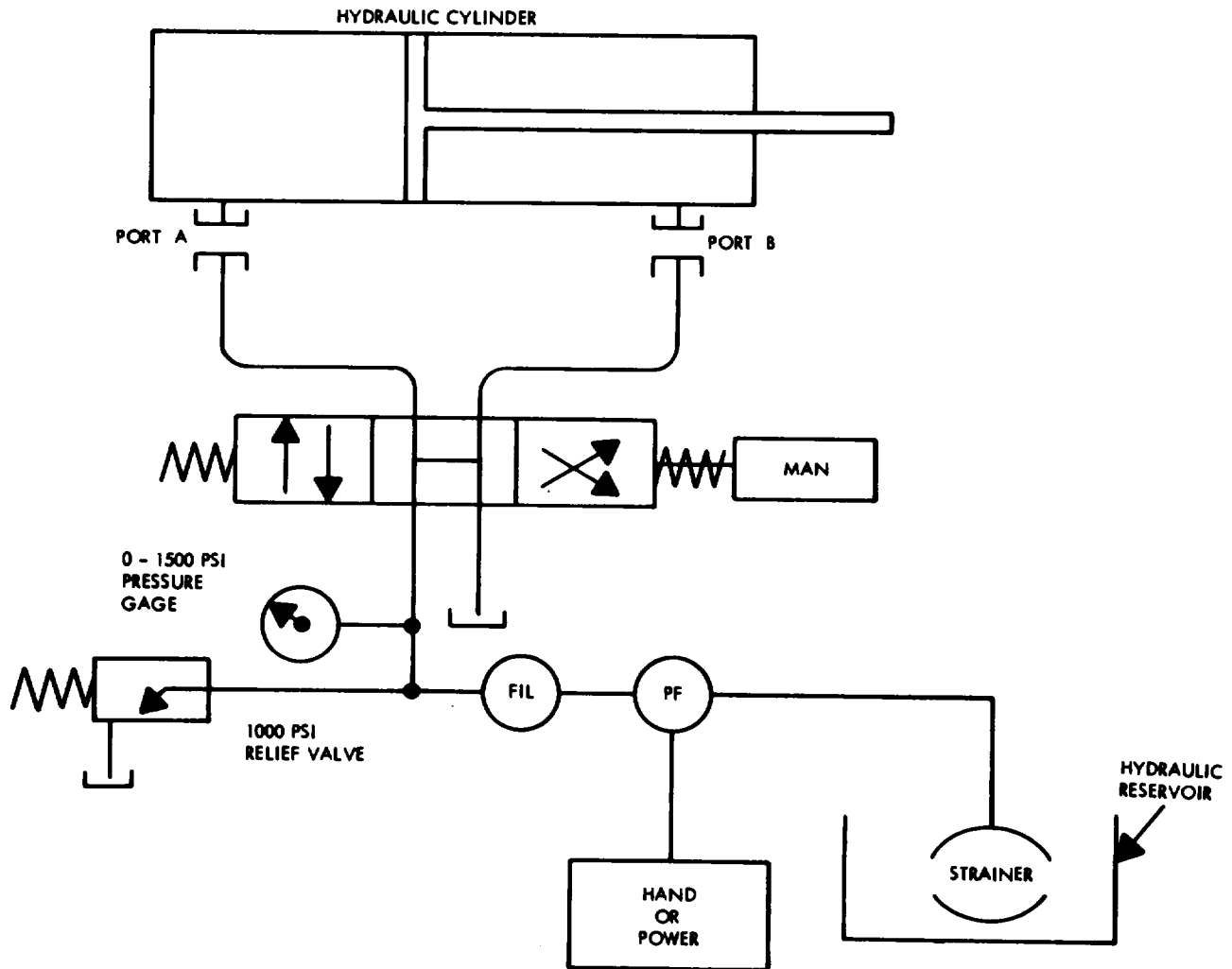
(1) Connect a test arrangement to the cylinder as shown in figure 10-26.

(2) Cycle the hydraulic cylinder through its full stroke at least five times by applying pressure alternately to port A and B. There shall be no exterior leakage. Leakage past the rod seals during cycling test shall not form one

drop.

(3) Apply pressure at port B and retract the cylinder to its minimum length and then disconnect the line at port A. This leakage shall not exceed 3 cubic inches per minute during the fifth minute of a five minute pressure test period. There shall be no rod seal leakage or exterior leakage.

g. Installation. Refer to paragraph 1047.



TA170084

Figure 10-26. Testing arrangements for hydraulic cylinder and ram.

Section VIII. REWORK OF VEHICLE COMPONENTS FOR KIT INSTALLATION

10-38. General. This section provides instructions for preparation and rework of M60, M60A1, M60A1 RISE and M60A3 tank components prior to installation of the early model M9 bulldozer kit.

10-39. Rework Transmission Shroud (Fig 10-27).

a. Cut out access door (view A).

b. Attach hardware to access door (view B).

c. Attach tube and secure with two clamps and hardware (view B).

d. Install clutch adjusting tool 7953545 (view B).

Section IX. INSTALLATION

10-40. General.

a. This section contains instructions for installation of the early model M9 bulldozer kit.

b. The M9 bulldozer kit is shipped with some parts already assembled, and a number of those assemblies require partial disassembly before installation on the vehicle. Before disassembling any of the material, identify each assembled group, loose parts, or individual assembly to make certain no parts are missing.

10-41. Installation of Hydraulic Pump and Power Takeoff Group (Fig. 10-28).

a. Open engine exhaust access doors.

b. Remove exhaust elbows and transmission shroud. See TM 9-2350-215-20 (M60, M60A1), TM 9-2350-257-20-1 (M60A1 RISE), or TM 9-2350-253-20-1 (M60A3).

c. Remove power takeoff access cover.

d. Install sprocket assembly in power takeoff (view A).

e. Connect hose loosely to lower pump port, while unit is on the bench (view B).

f. Connect hose to upper pump connector (view C).

NOTE

Prior to installing the mount assembly 7383915, make a brake adjustment at the transmission in accordance to vehicle requirements.

g. Install mount assembly (view D).

NOTE

Install spacer and screw ("A", view E) prior to installing bracket 7699997.

h. Install bracket onto right side of transmission (view E).

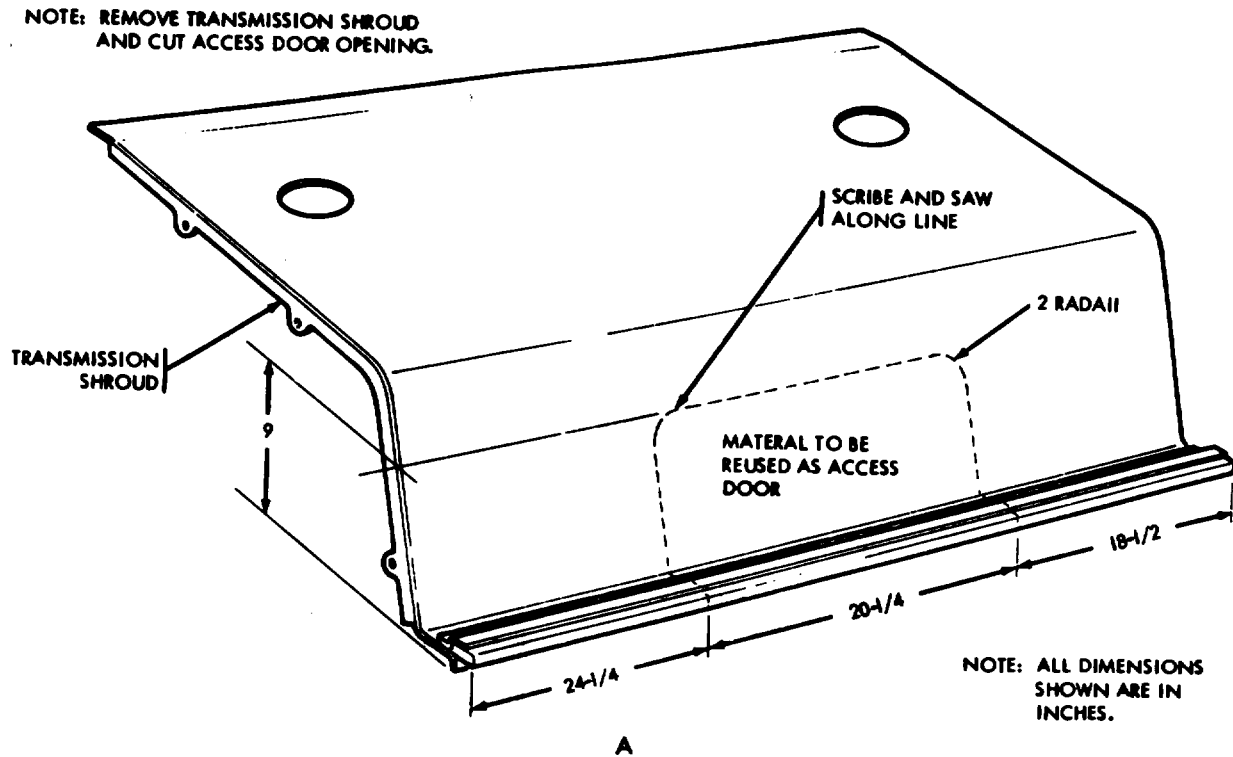
10-42. Installation of Clutch Control Assembly (Fig. 10-29).

NOTE

Rotate lugs on yoke 7699980 to insure freedom of movement. Remove paint from yoke if binding occurs.

a. Install clutch yoke and support bracket (view A).

b. Drill hole, and install housing to left side of vehicle (view B).



NOTE: AFTER ATTACHING HARDWARE, POSITION ACCESS DOOR IN SHROUD OPENING. DRILL 17/32 HOLES USING HINGES AS TEMPLATES AND BOLT INTO PLACE WITH 4 REMAINING SCREWS, NUTS, LOCK-WASHERS, AND WASHERS.

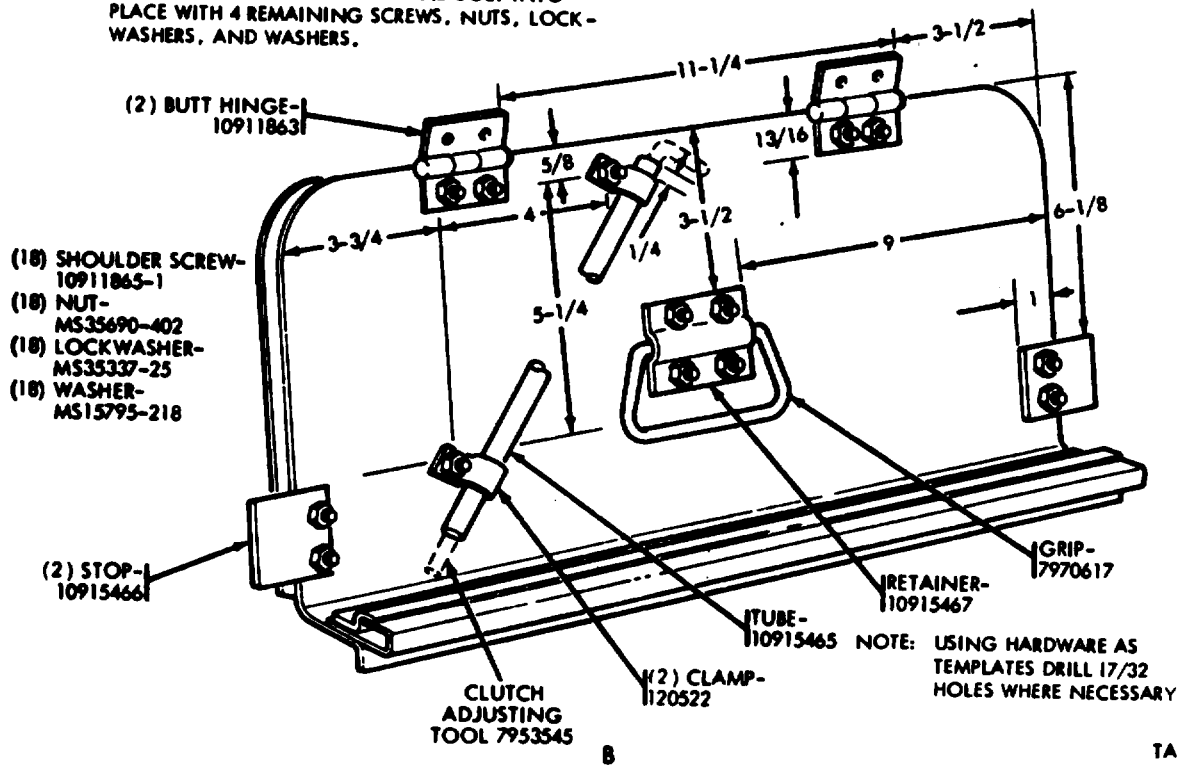
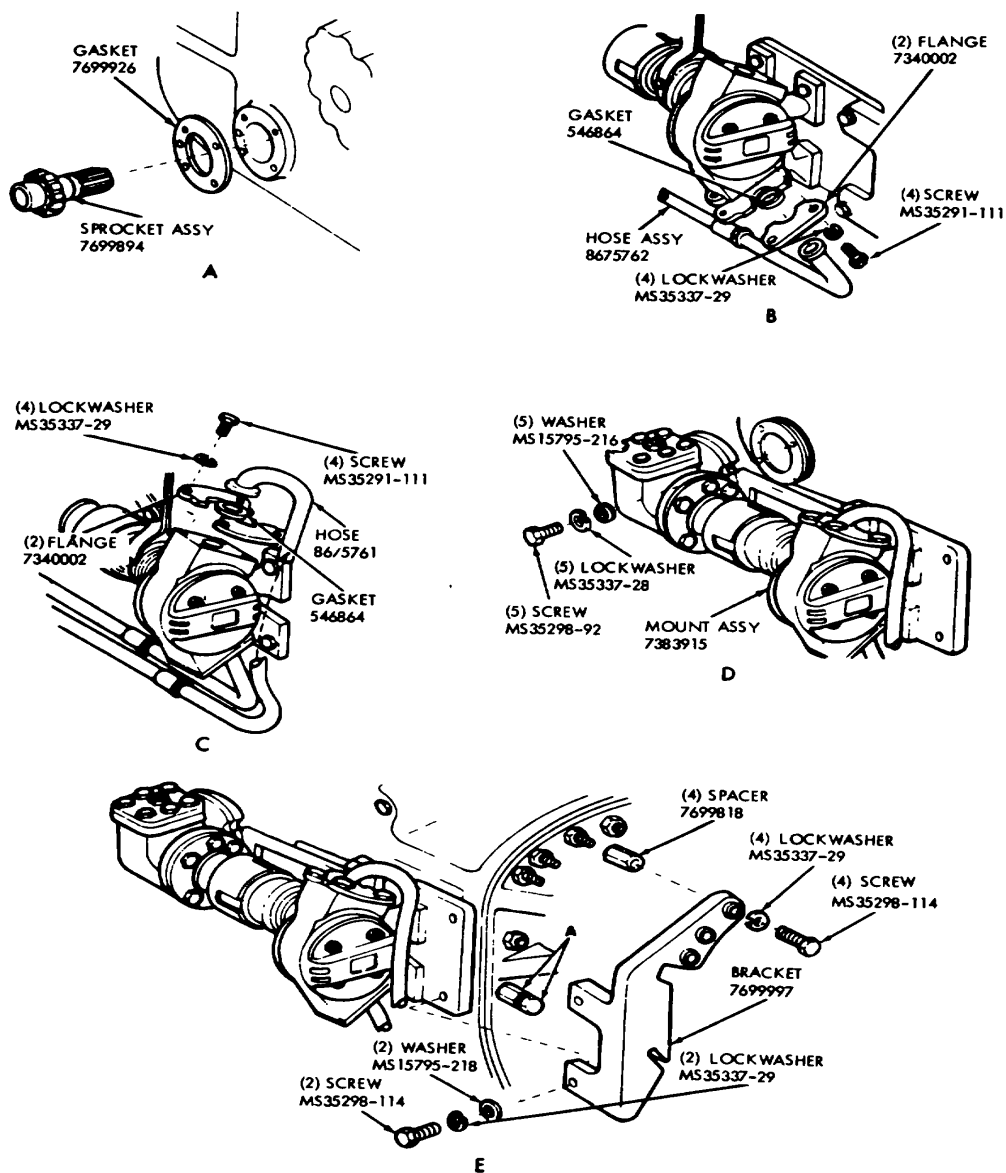


Figure 10-27. Rework of transmission shroud for access door opening (early model bulldozer).

TM 9-2590-209-14&P



TA170086

Figure 10-28. Installation of hydraulic pump and power takeoff group (early model bulldozer).

10-53

Figure 10-28. Installation of hydraulic pump and power takeoff group (early model bulldozer).

NOTE

Cable should be adjusted into detent positions prior to attaching yoke 7699980.

- c. Secure cable to bracket, and install housing (view C).
- d. Install intermediate cable clamp (view D).
- e. Install cable to clutch control yoke (view E).
- f. Test action of cable prior to assembling yoke to clevis. Adjust plunger for desired tension on rod. Refer to view B.

10-43. Installation of Blade Assembly (Fig 10-30). This section provides instructions for the installation of blade assembly.

- a. Place blade assembly face down. Install pushbeams to blade assembly and position pushbeams toward tank (view A).
- b. Use hydraulic system to position ram (view B).
- c. Install pushbeam assembly to mounting bracket, and secure with pin, lock, screw, and lockwasher (view B).
- d. Align cylinder ram with pushbeam, and secure with pin, lock, screw and lockwasher (view C).
- e. Install inner tilt arm to blade assembly, and secure with pin, lock, screw, and lockwasher.
- f. Raise blade assembly to vertical position (view D).
- g. Install outer tilt arm to mounting bracket and secure with cap, two bolts, and lockwashers (view E).
- h. Install inner tilt arm to mounting bracket, and secure with pin, lock, screw, and lockwasher (view F).

- i. Install outer tilt arm to blade assembly, and secure with pin, lock, screw, and lockwasher (view C).

10-44. Installation of Carrying Hooks Assembly (Fig 10-31).

- a. Install arm on shaft (view A).
- b. Install carrying hooks in left mounting bracket (view B).
- c. Install carrying hook in right mounting bracket (view C).
- d. Install center shaft and couplings (view D).
- e. Engage moldboard with hooks (view E).

NOTE

Prior to welding support 10883667, manipulate the handle assembly to insure freedom of movement of the travel lock hooks relative to the moldboard engagement.

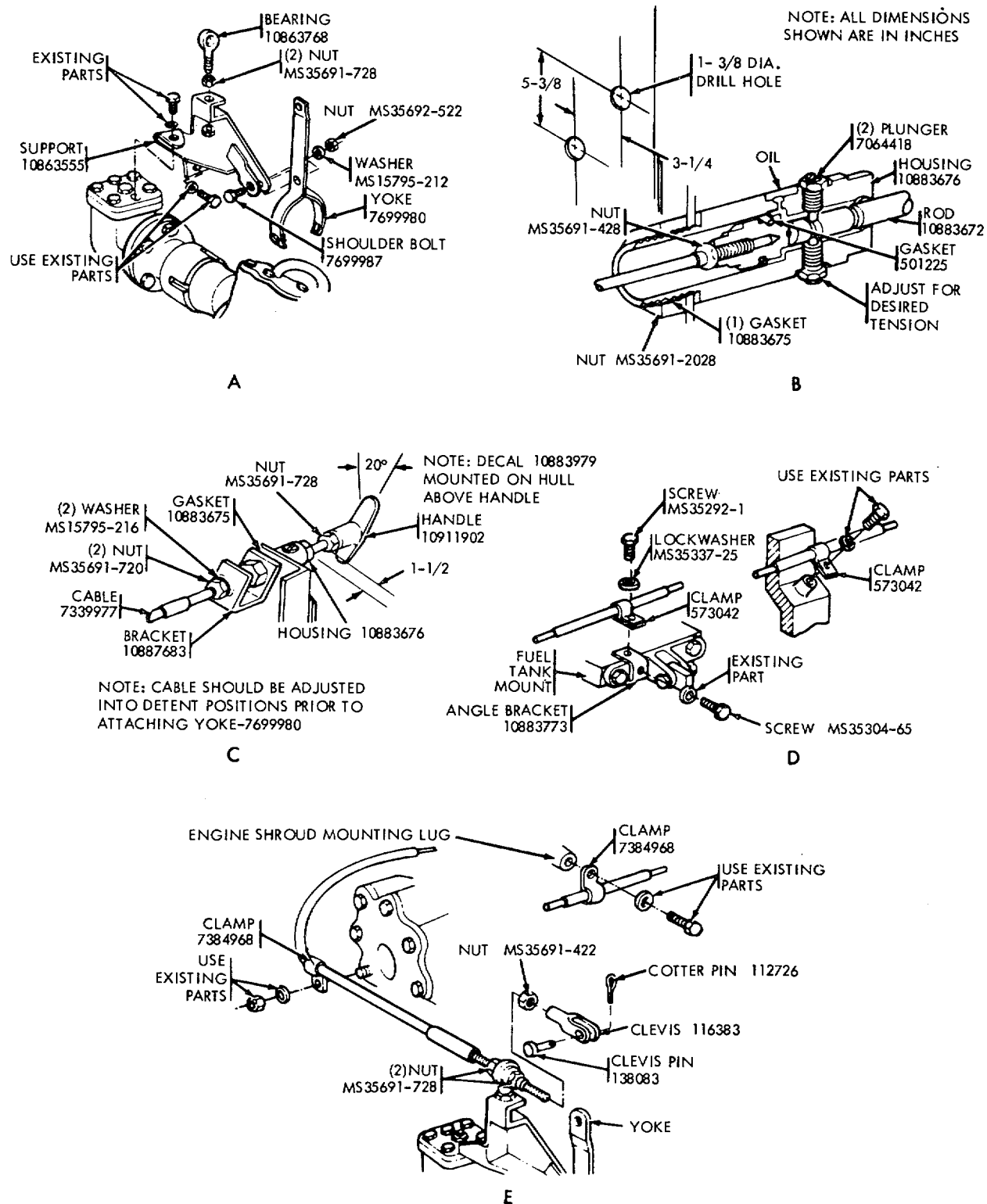
- f. Install handle assembly, and support. Adjust and weld support (view F).

10-45. Installation of Headlamps and Guards (Fig 10-32).

- a. Install two supports and secure with four screws and washers.
- b. Install headlamp guard on supports and secure with two bolts, lockwashers, nuts, washers, and cotter pins.
- c. Install adapter and existing headlamp assembly.

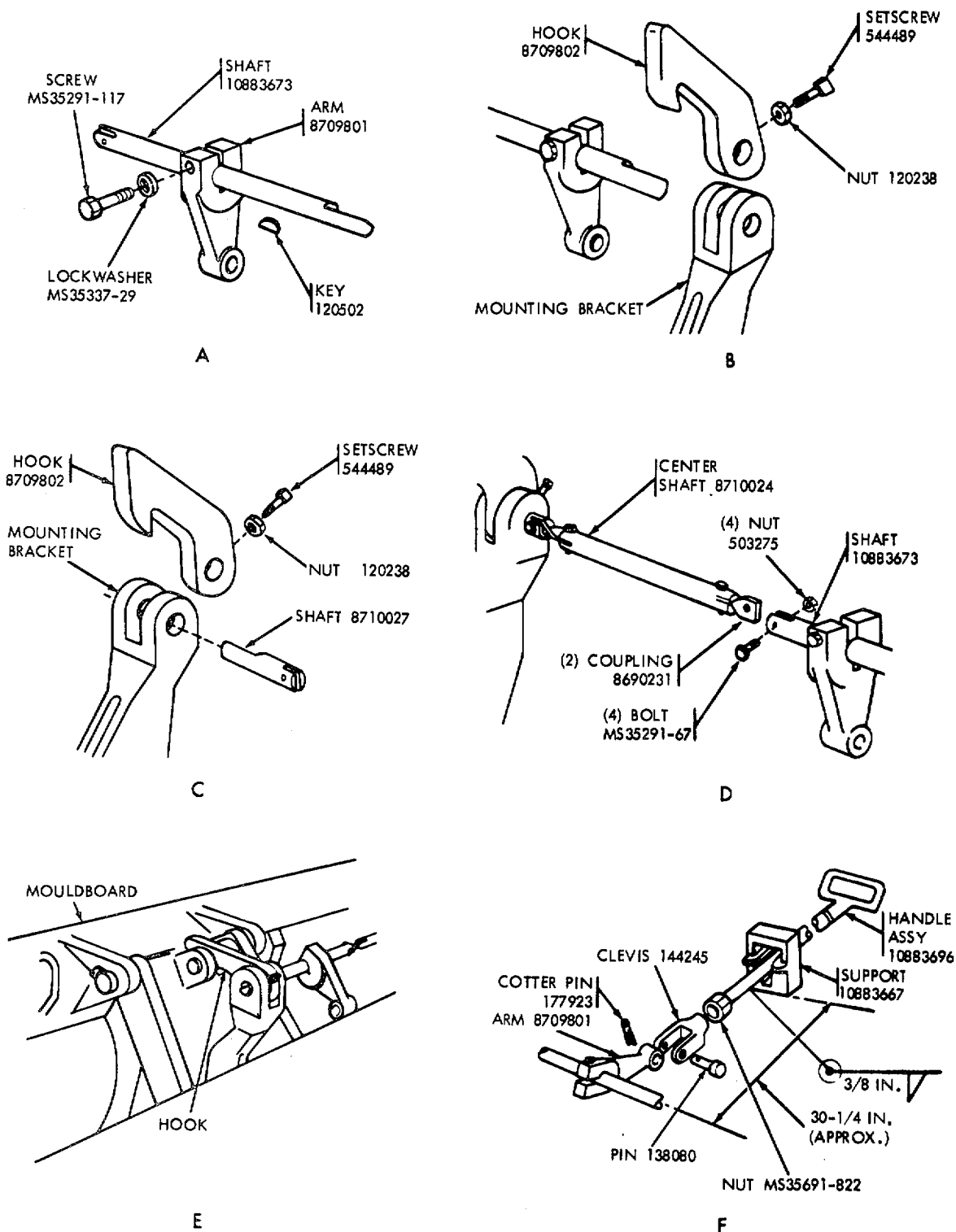
10-46. Installation of Reservoir (Fig 10-33).

- a. Install reservoir on left rear fender plate and hold front end of reservoir in place with two bolts, lockwashers, washers, and nuts.
- b. Install two bolts in fender plate and hold rear end of reservoir in place.



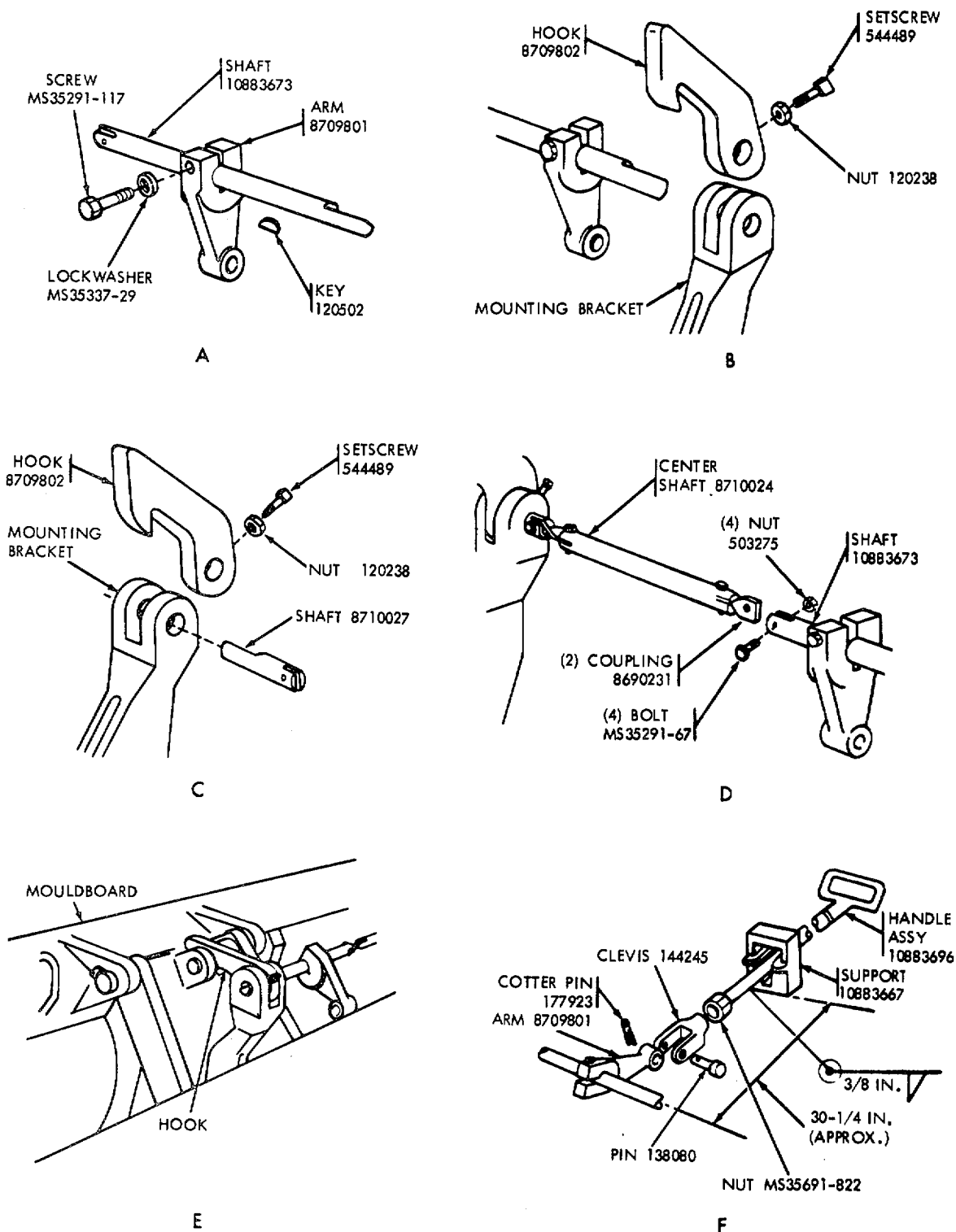
TA170087

Figure 10-29. Installation of clutch control assembly (early model bulldozer).



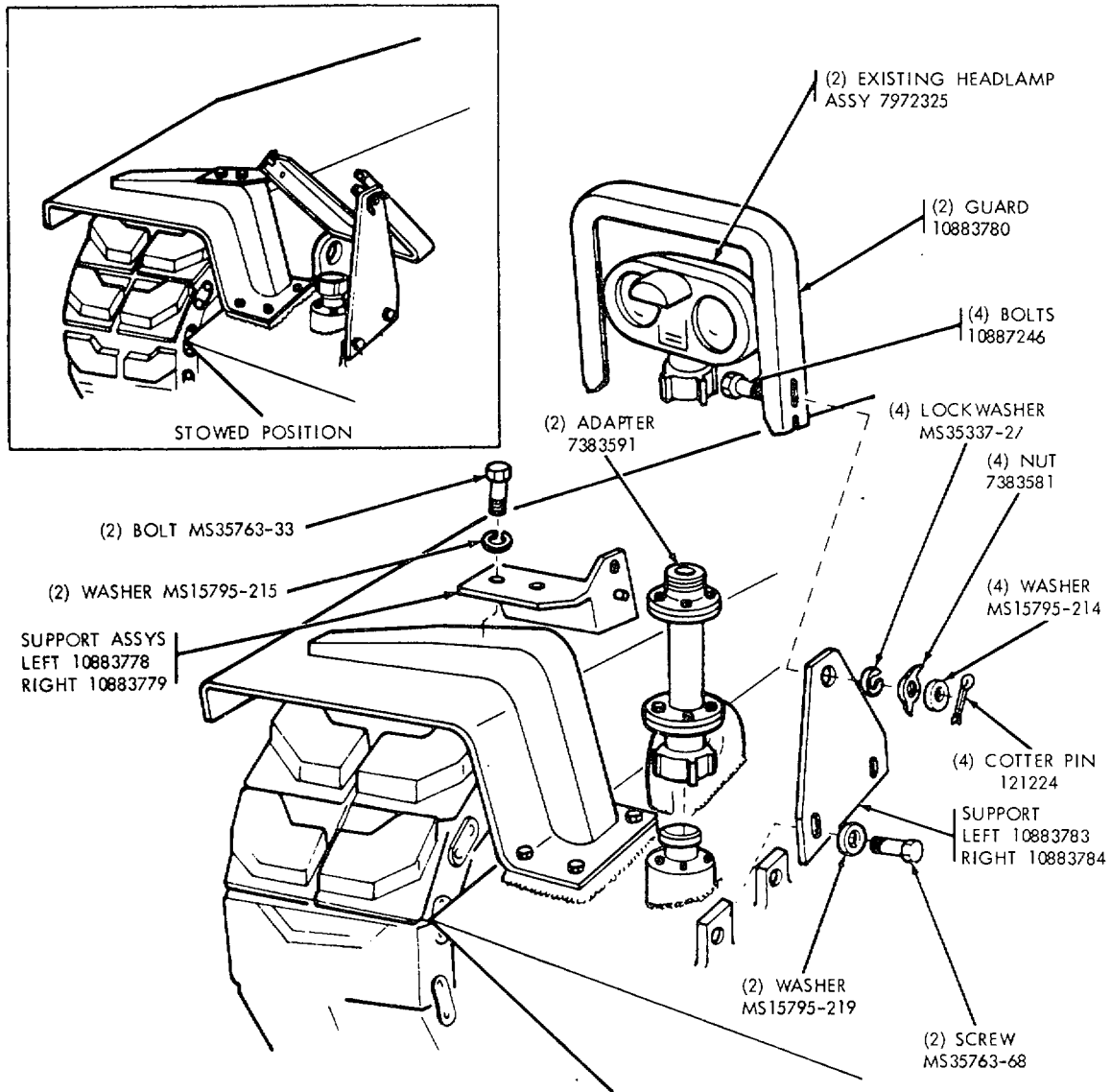
TA170089

Figure 10-30. Installation of blade assembly (early model bulldozer).



TA170089

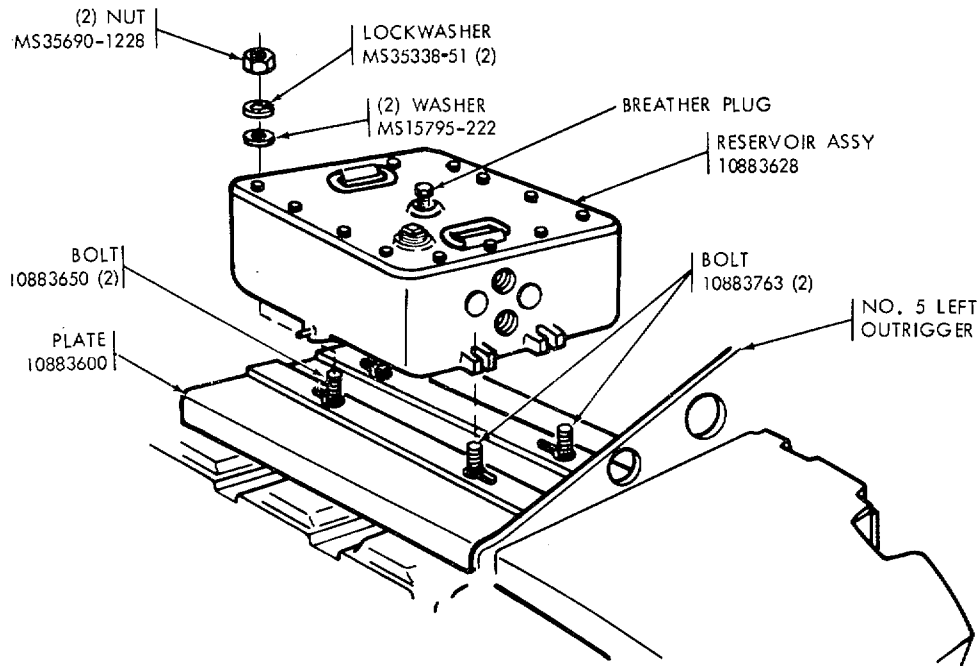
Figure 10-31. Installation of carrying hooks assembly (early model bulldozer).



NOTE: THE HEADLAMP ASSEMBLIES AND ADAPTERS MUST BE STOWED WHEN THE BULLDOZER IS USED FOR REMOVING TREES. THE HEADLAMP GUARD SHALL BE PLACED IN THE STOWED POSITION AND THE NUT 7383581 TIGHTENED.

TA170090

Figure 10-32. Installation of headlamps and guards (early model bulldozer).



TA170091

Figure 10-33. Installation of reservoir.

10-47. Installation of Cylinders and Ram Assemblies (Fig 10-34).

- a Install hoses and connections to cylinder (view A).
- b Extend piston rod full stroke prior to installing hoses to manifold (view B).
- c Install cylinder to mounting bracket with caps, bolts, and lockwashers (view B).
- d Tilt cylinders back and forth. Adjust fittings to the lower cylinder port to obtain the greatest amount of travel (view A).
- e Install hoses from cylinder to manifold (view C).

10-48. Installation of Cylinder Guards (Fig 10-35).

- a Install front guard to cylinder with screws, washers, and lockwashers (view B).
- b Position rear guard over cylinder and ram assembly, and install four screws, lockwashers, washers, and lugs; hold guards in position (view A).

c. Install front guard as high as possible within limits of slotted holes. Secure guard with four screws, lockwashers, and washers (view B).

d. Install adjusting screws to position rear guard for tack welding lugs (view C). Adjust screws to center rear guard (view C).

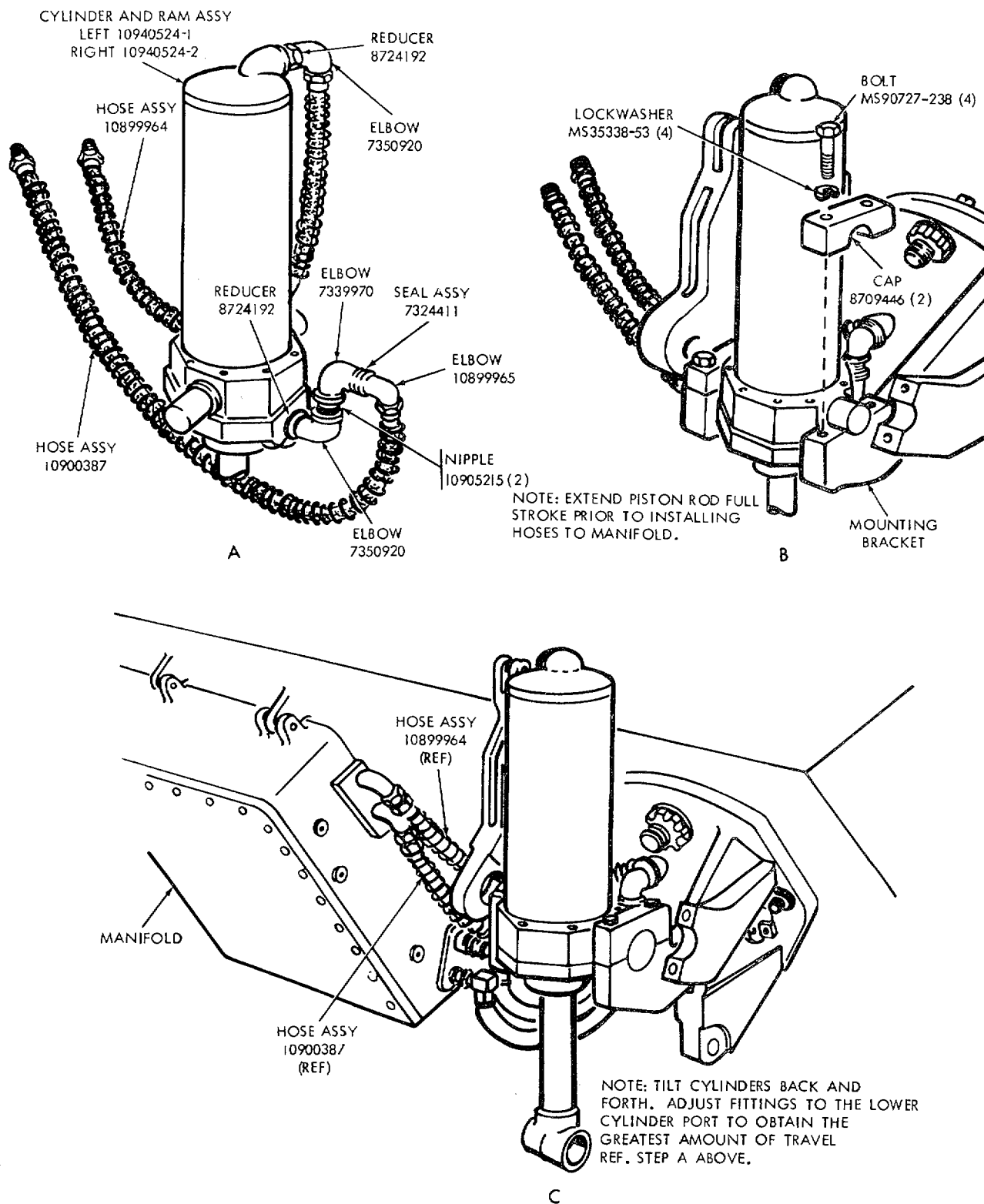
e. Install rear guard to mounting bracket (view C) by tack welding the four lugs with rear guard as close to the hull as possible.

f. Loosen adjusting screws and shake cylinder to check for clearance between guards, cylinders, and rear guard. Remove front guard and complete welding three sides of each lug (view C).

g Remove adjusting screws from guard and return to spares.

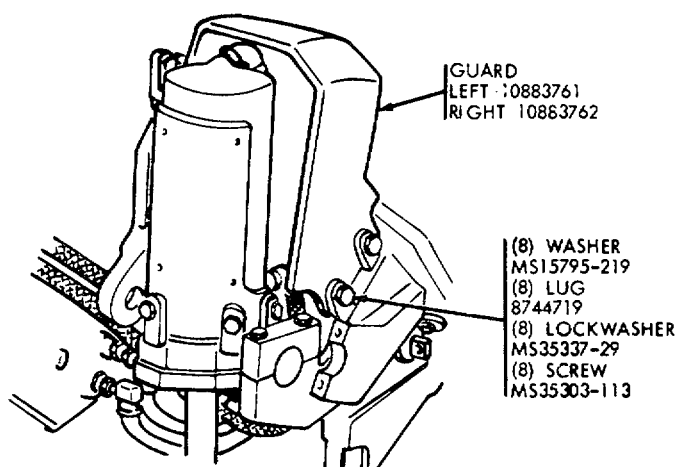
h. Install guards and secure with attaching hardware (view B).

i Position two spacers between lower guard and cylinder mounting bracket and secure guard and spacers to mounting bracket (view D).

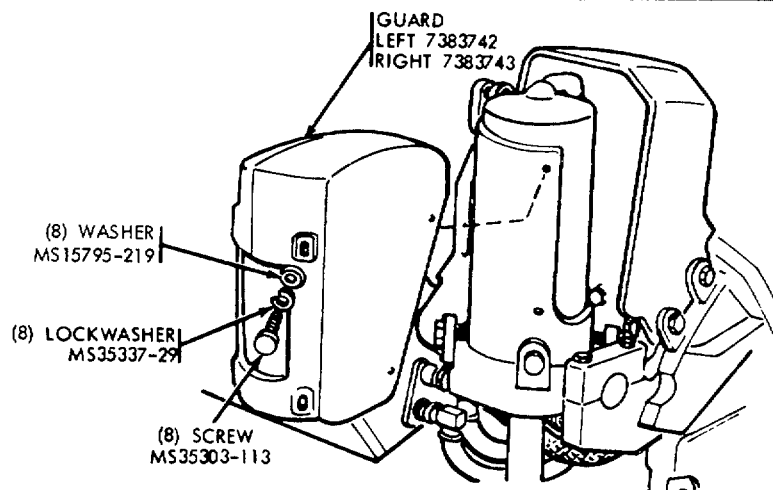


TA170092

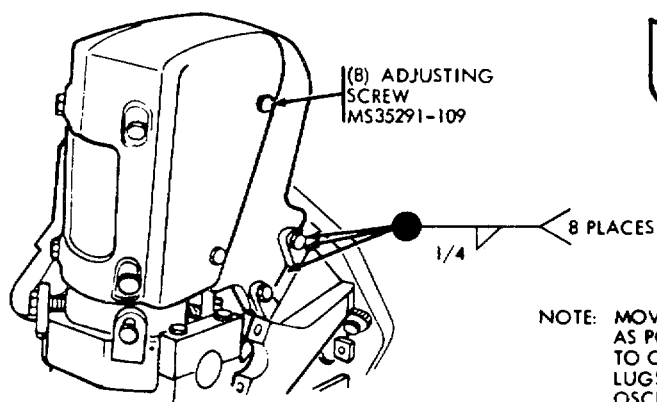
Figure 10-34. Installation of cylinders and ram assemblies.



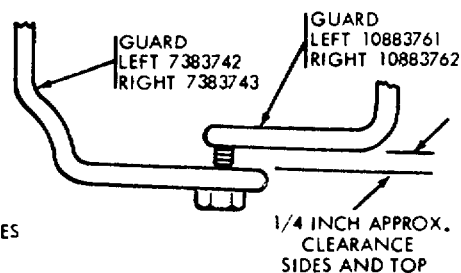
A. POSITION REAR GUARD OVER CYLINDER AND RAM ASSEMBLY



B. INSTALL FRONT GUARD



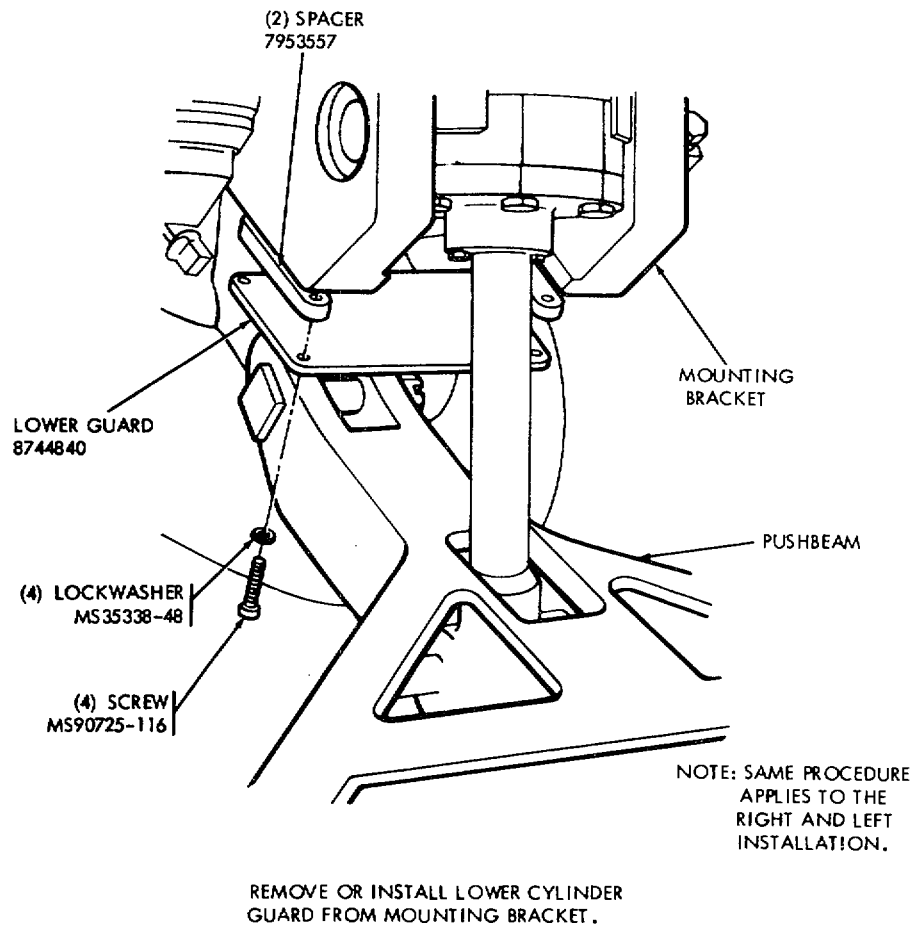
C. INSTALL REAR GUARD TO MOUNTING BRACKETS AND WELD LUGS



NOTE: MOVE REAR GUARD AS CLOSE TO HULL AS POSSIBLE. ADJUST (4) SCREWS-MS35291-109 TO CENTER REAR GUARD AND TACK WELD LUGS. LOOSEN ADJUSTING SCREWS AND OSCILLATE CYLINDER TO CHECK FOR PROPER CLEARANCE. REMOVE FRONT GUARD AND COMPLETE WELDING THREE SIDES OF EACH LUG. DISCARD (4) ADJUSTING SCREWS AND REINSTALL FRONT GUARD.

TA170093

Figure 10-35. Installation of cylinder guards (sheet 1 of 2).



D

TA170094

Figure 10-35. Installation of cylinder guards (sheet 2 of 2).

APPENDIX A
REFERENCES

A-1. Publication Indexes.

The following indexes should be consulted frequently for latest changes or revisions of references given in this appendix and for new publications relating to material covered in this Technical Manual:

DA Pam 3101Consolidated Index of Army Publications and Forms.

A-2. Publications References.

The following is a list of publications and form references used with this equipment.

- CTA 50-970Expendable Items (Except: Medical, Class V, Repair Parts, and Heraldic Items)
- DA Form 2028Recommended Changes to Equipment Technical Manuals.
- DA Form 2028-2Recommended Changes to Publications and Blank Forms.
- DA Form 2404Equipment Inspection and Maintenance Worksheet.
- DA Form 2408-5Equipment Modification Record.
- DD Form 1397Processing and Deprocessing Record of Shipment, Storage, and Issue of Vehicles and Spare Engines Tag.
- SB 708-42 Federal Supply Code For Manufacturers; United States and Canada.
- SF 368Quality Deficiency Report.

- TM 9-214 Inspection, Care, and Maintenance of
Antifriction Bearings.
- TM 9-237 Operator's Manual: Welding Theory and
Application.
- TM 9-2300-378-20P/1Organizational Maintenance Repair Parts
and Special Tools List for Hull Tank,
Combat, Full-Tracked: 152-MM Gun
Launcher, M60A2, (M60A1E2) W/E (2350-
00-930-3590) Tank, Combat, Full-Tracked:
105-MM Gun, M60A1 W/E (2350-00-756-
8497), Tank, Combat, Full-Tracked: 105-
MM Gun M60 W/E (2350-00-678-5773)
Vehicle Combat Engineer, Full-Tracked:
M728 W/E (2350-00-795-1797) Tank, Com-
bat, Full-Tracked: 90-MM Gun, M48A3
W/E (2350-00-895-9154).
- TM 9-2300-378-35/1Direct Support and General Support Main-
tenance Manual for: Tank, Combat Full-
Tracked: 152-MM Gun Launcher, M60A2
W/E (2350-00-930-3590) (Hull Suspension:
and Final Drive, Only) and Tank, Combat,
Full-tracked: 105-MM Gun, M60A1 W/E
(2350-00-756-8497) Tank, Combat, Full-
Tracked: 105-MM Gun M60 W/E (2350-00-
678-5773) and Vehicle Combat Engineer,
Full-Tracked: M728 W/E (2350-00-795-
1797) Hull, Suspension, Final Drive, Slipring
Assembly, Turret and Miscellaneous Com-
ponent,.
- TM 9-2300-378-35P/1-1Direct Support, General Support, and Depot
Maintenance Repair Parts and Special
Tools List for Hull Tank, Combat Full-
Tracked: 152-MM Gun Launcher M60A2
(M60A1E2) W/E (2350-00-930-3590) Tank,
Combat, Full-Tracked: 105-MM Gun
M60A1 W/E (2350-00-756-8497): Tank,
Combat, Full-Tracked: 105-MM Gun, M60
W/E (2350-00-895-9154).
- TM 9-2300-378-35P1/2-2Direct Support, General Support, and Depot
Maintenance Repair Parts and Special
Tools Lists for Hull Tank, Combat, Full-
Tracked: 152-MM Gun Launcher, M60A2
(M60A1E2) W/E (2350-00-930-3590): Tank,
Combat, Full-Tracked: 105-MM Gun
M60A1 W/E (2350-00-756-8497) Tank,
Combat, Full-Tracked: 105-MM Gun M60
W/E (2350-00-678-5773) Vehicle, Combat
Engineer, Full-Tracked: M728 W/E (2350-
00-795-1797) Tank, Combat, Full-Tracked:
90-MM Gun, M48A3 W/E (2350-00-895-
9154).

LO 9-2350-215-12	Tank, Combat, Full-Tracked: 105-MM Gun, M60A1 and Tank, Combat, Full-Tracked: 105-MM Gun, M60.
LO 9-2350-257-12	Tank, Combat, Full-Tracked, 105-MM Gun M60A1 (RISE).
TM 9-2350-215-10	Operator's Manual for Tank, Combat, Full-Tracked: 105-MM Gun, M60A1 and Tank, Combat, Full-Tracked: 105-MM Gun, M60.
TM 9-2350-257-10-1	Operator's Manual-Hull: Tank, Combat, Full-Tracked: 105-MM Gun M60A1 (RISE).
TM 9-2350-215-20	Organizational Maintenance Manual: Tank, Combat, Full-Tracked: 105-MM Gun, M60A1 W/E (2350-00-756-8497) and Tank, Combat, Full-Tracked: 105-MM Gun, M60 W/E (2350-00-678-5773).
TM 9-2350-253-20-1	Organizational Maintenance Manual: Tank, Combat, Full-Tracked: 105-MM Gun, M60A3 (NSN 2350-00-148-6548) and (NSN 2350-01-061-2306) (TTS) Hull.
TM 9-2350-257-20-1	Organizational Maintenance Manual: Tank, Combat, Full-Tracked: 105-MM Gun M60A1 (RISE) (NSN 2350-00-116-9765), Hull.
TM 9-2350-257-20P-1	Organizational Maintenance Repair Parts and Special Tools List: Tank, Combat, Full-Tracked: 105-MM Gun, M60A1 (RISE) (NSN 2350-00-116-9765), Hull.
TM 9-2350-257-20P-2	Organizational Maintenance Repair Parts and Special Tools Lists for Turret Tank, Combat, Full-Tracked: 105-MM Gun, M60A1 (RISE) (NSN 2350-00-116-9765).
TM 9-2350-257-34P-1	Direct Support and General Support Maintenance Manual: Tank, Combat, Full-Tracked: 105-MM Gun M60A1 (RISE) (NSN 2350-00-116-9765), Hull.
TM 9-2350-257-34P-2	Direct Support and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools): Turret Tank, Combat, Full-Tracked: 105-MM Gun M60A1 (RISE) (NSN 2350-00-116-9765).

TM 9-2520-223-34.....	Direct Support, General Support, and Depot Maintenance Manual (Including Repair Parts and Special Tools Lists): Transmission, with Container, Model CD850-5 (2520-00-649-8542) and Model CD850-6A (2520-00-086-7792) (Detroit Diesel Allison Division, GMC).
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 740-90-1	Administrative Storage of Equipment.
TM 750-244-6	Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use.
TM 750-244-7	Procedures for Destruction of Equipment in Federal Supply Classification 1000, 1005, 1010, 1015, 1020, 1025, 1030, 1055, 1090, and 1095 to Prevent Enemy Use.

APPENDIX B
COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1. Scope. This appendix lists integral components of and basic issue items for the M9 bulldozer to help you inventory items required for safe and efficient operation.

B-2. General. This Components of End Item List is divided into the following sections:

a. Section II, Integral Components of the End Item. These items, when assembled, comprise the M9 bulldozer and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section III, Basic Issue Items. These are the minimum essential items required to place the M9 bulldozer in operation, to operate it, and to perform emergency repairs. Although shipped separately packed they must accompany the M9 bulldozer during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BIL, based on TOE/MTOE authorization of the end item.

B-3. Explanation of Columns.

a. Illustration. This column is divided as follows:

- (1) Figure Number. Indicates the figure number of the illustration on which the item is shown.
- (2) Item Number. The number used to identify item is called out in the illustration.

b. National Stock Number. Indicates the national stock number assigned to the item and which will be used for requisitioning.

c. Part Number. Indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

d. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

e. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. Usable On Code. "USABLE ON" codes are included to help you identify which component items are used on the different models.

g. Quantity Required (Qty Req'd). This column lists the quantity of each item required for a complete major item.

h. Quantity. This column is left blank for use during an inventory. Under the Recv'd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item at a later date, such as for shipment to another site.

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)	(8) Quantity			
(a) Figure No.	(b) Item No.	National Stock Number	Part No.	Description	Location	Usable On Code	Qty Reqd	Rev'd	Date	Date	Date
<p style="text-align: center;">Section II INTEGRAL COMPONENTS OF END ITEM</p>											
E-13	2	3830-00-520-8385	7360940	Cable assy.			2				
<p style="text-align: center;">Section III BASIC ISSUE ITEMS</p>											
4-12			10933861	Eye assy.			1				
4-12			7739108	Bolt			1				
E-26	3	5120-00-179-5667	7953545	Tool, clutch adjusting			1				
E-26	1	5120-00-907-9001	10952095	Wrench, Spanner			1				
E-26	2		MS16146-2	Wrench, Spanner			1				

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

- C-1. Scope.** This appendix lists additional items you are authorized for the support of the M9 bulldozer.
- C-2. General.** This list identifies items that do not have to accompany the M9 Bulldozer and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.
- C-3. Explanation of Listing.** National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment.

Section II. ADDITIONAL AUTHORIZATION LIST

TM

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION PART NUMBER AND FSCM AND USABLE ON CODE	(3) U/M	(4) QTY AUTH
6240-00-266-9940	(19207) 8743027 LAMP, 24-28V	EA	1

Change 1 C-1/C-2 (blank)

APPENDIX D

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

D-1. General

- a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.
- b. The Maintenance Allocation Chart (MAC) in section II designates overall responsibility for the performance of maintenance functions on the identified end item or component. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.
- c. Section III lists the special tools and test equipment required for each maintenance function as referenced from section II.
- d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

D-2. Maintenance Functions.

- a. *Inspect.* To determine the serviceability of an item by comparing its physical, mechanical and/or electrical characteristics with established standards through examination.
- b. *Test.* To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.
- c. *Service.* Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.
- d. *Adjust.* To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.
- e. *Align.* To adjust specified variable elements of an item to bring about optimum or desired performance.
- f. *Calibrate.* To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.
- g. *Install.* The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
- h. *Replace.* The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. *Repair.* The application of maintenance services¹ or other maintenance actions² to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. *Overhaul.* That maintenance effort (services/actions) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

¹Services inspect, test, service, adjust, align, calibrate, or replace.

²Action welding, grinding, riveting, straightening, facing, remachining, or resurfacing.

k. *Rebuild.* Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipments/components.

D-3. Explanation of Columns in the MAC, Section II.

a. *Column 1, Group Number.* Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. *Column 2, Component/Assembly.* Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. *Column 3, Maintenance Functions.* Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see para D-2).

d. *Column 4, Maintenance Level.* Column 4 specifies, by listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform the maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate "work time" figures will be shown for each level. The number of manhours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance levels are as follows:

C-----Operator or crew

O-----Organization maintenance

F-----Direct support maintenance

H -----General support maintenance

D -----Depot maintenance

e. *Column 5, Tools and equipment.* Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated functions.

D-4. Explanation of Columns in Tool and Test Equipment Requirements, Section III.

a. *Column 1, Reference Code.* The tool and TI'MDE reference code correlates with a code used in the MAC, Section II, Column 5.

b. *Column 2, Maintenance Level.* The lowest level of maintenance authorized to use the tool or test equipment.

c. *Column 3, Nomenclature.* Name or identification of the tool or test equipment.

d. *Column 4, National Stock Number.* The national stock number of the tool or TMDE.

e. *Column 5, Tool Part Number.* The manufacturer's part number.

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAIN. FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND TEST EQUIPMENT	(6) REMARKS
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
06	Electrical System								
0608	Cable Assy, Magnetic Clutch Control	Inspect Test Replace Repair		0.1 0.3				4,5 4,5 4,5 4,5	
0608	Lamp Assy, Indicator, Magnetic Clutch Control	Inspect Test Replace Repair		0.1 0.2				4,5 4,5 4,5 4,5	
0609	Adapter, Headlamp	Inspect Replace Repair	0.1 0.5 0.5					4,5 4,5 4,5	
20	Power Control Unit & Power Take-Offs								

Section II. MAINTENANCE ALLOCATION CIIART (CONTINUED)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAIN. FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND TEST EQUIPMENT	(6) REMARKS
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
2004	Clutch Assem- bly, Magnetic, Right-Angle Drive	Inspect Service Adjust Replace Repair	2.0 3.0	0.1 0.1 3.0			1,2,4,5 4,5 1,2,4,5,7,8	4,5 4,5	
2004	Clutch Sub- assembly, Magnetic, Right-Angle Drive	Replace Repair			2.0 2.0		1,2,4,5,8 1,2,4,5,8		
2004	Receptacle Assembly, Clutch Sub- assembly, Magnetic, Right-Angle Drive	Replace Repair			1.0 1.0		4,5,6 4,5,6,8		
2004	Housing Assembly, Power Take- off to Clutch Assembly	Inspect Replace Repair	2.0 2.5	0.5			4,5,6 4,5,6	4,5,6	
2004	Power Take- Off Assy, Right- Angle Drive	Inspect Re'place Repair	0.5	0.1 4.0	5.0		2,4,5,6,8	4 4,5,6	
2004	Gear Set, Power Take- Off Assembly, Right-Angle Drive	Inspect Adjust Replace			2.0 2.0	2.0	2,4,8 2,4,8	2,4,8	
2004	Retainer Assem- bly, Power Take- Off Assembly, Right-Angle Drive	Inspect Replace Repair			1.0 1.0	1.0	2,4,8 2,4,8	2,4,8	

MAINTENANCE ALLOCATION CHART (CONTINUED)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAIN. FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND TEST EQUIPMENT	(6) REMARKS	
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT			
			C	O	F	H	D			
2004	Sprocket Assembly, Power Take- Off Bull- dozer	Inspect Replace	3.0	0.1	1.6		4,5	4,5		
2006	Tilt Arm Assembly, Moldboard Bulldozer	Inspect Replace	2.0	0.1			4,5,7			4
2006	Guards and Brackets, Hydraulic System	Inspect Replace	1.0	0.2			4,5,7			4
2006	Rods and Levers, Control Hydraulic System Control Valve-Bulldozer	Inspect Adjust Replace	0.5 0.5	0.3			4,5,7 4,5,7			4
2006	Pushbeam	Inspect Repair		0.2			4,5,8			4,5
2006	Clamp Assembly, Emergency Lift Retaining, Blade Assembly Bull- dozer	Replace Repair	0.5 1.0				4 4			
2006	Blade Assembly, (Moldboard) Bulldozer	Inspect Replace Repair	4.0 4.0	0.3			4,5,7 4,5,7			4
2006	Cutting Edge, Blade Assembly, Bulldozer	Inspect Replace	3.0	0.2			4,5			4
2006	Cable Assembly, Emergency Lift Blade Assembly, Bulldozer	Inspect Replace	1.0	0.2			4,5			4

MAINTENANCE ALLOCATION CHART (CONTINUED)

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAIN. FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND TEST EQUIPMENT	(6) REMARKS
			UNIT		DIRECT SUPPORT	GENERAL SUPPORT	DEPOT		
			C	O	F	H	D		
2006	Locking Hooks, Blade Assembly, Bulldozer	Inspect Replace	0.5	0.2			4,5,7	4	
2401	Hydraulic Pump Assembly	Inspect Replace Repair	3.0	0.3	3.0		4,5 4,8	4	
2406	Filter, Oil Reservoir Bulldozer	Service		0.5				4,5	
2406	Hoses, Lines and Fittings- Bulldozer	Inspect Replace Repair	1.0 1.0	0.3			4,5,7 4,5,7	4	
2407	Cylinder Assembly, Right and Left-Bull- dozer	Inspect Replace Repair	3.0	0.2	4.0		4,5,7 4,5,8	4	
2407	Ram Assembly, Right and Left Cylinders-Bull- dozer	Inspect Replace Repair			3.0 1.0	2.5	4,8 4,8	4,8	
2408	Reservoir, Oil Hydraulic System-Bull- dozer	Inspect Service Repair		0.1 0.5 0.6		0.5		4 4,5 4,5	

Section III. SPECIAL TOOL AND TEST EQUIPMENT REQUIREMENTS

(1) Reference code	(2) Maintenance category	(3) National Stock Nomenclature number (NSN)	(4) Tool number	(5)
1	F	Wrench, Spanner (Remove and install threaded ring on magnetic clutch assembly)	5120-00-293-1798	\fs20 MS1t6146-2
2	F	Wrench, Spanner (Remove and install threaded retainer on right-angle drive)	5120-00-907-9001	10952095
3	O	Tool, Clutch Adjusting (Adjust right-angle drive mechanical clutch). (Early model] bulldozer).	5120-00-179-5667	7953545
COMMON TOOL SETS				
4	O,F,H	Tool Kit, General Mechanic's	5180-00-1777033	
5	O	Shop Equipment, Automotive #1 Maintenance, OM, Common #1	4910-00-754-0654	
6	O	Shop Equipment, Automotive Maintenance, OM, Supplemental #1	4910-00-754-0653	
7	O	Shop Equipment, Automotive Maintenance, OM, Supplemental #2	4940-00-754-0743	
8	F,H	Shop Equipment, Automotive Maintenance, FM, Basic	4910-00-754-0705	

APPENDIX E

REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

E-1. Scope. This appendix lists spares and repair parts; special tools; and other support equipment required for performance of organizational, direct support, and general support maintenance of the M9 Bulldozer. It authorizes the requisitioning and issue of spares and repair parts as indicated by the source and maintenance codes.

E-2. General. This Repair Parts and Special Tools List is divided into the following sections:

a. Section II. Repair Parts List. A list of spares and repair parts authorized for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in numeric sequence, with the parts in each group listed in figure and item number sequence. Bulk materials are listed in NSN sequence.

b. Section III. Special Tools List. A list of special tools and support equipment authorized for the performance of maintenance.

c. Section IV. Repair Parts List (Early Model Bulldozer). A list of early model bulldozer repair parts authorized for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending numerical sequence with the parts in each group listed in figure and item number sequence.

d. Section V. National Stock Number and Part Number Index. A list, in National item identification number (NIIN) sequence, of all National stock numbers (NSN) appearing in the listings, followed by a list in alphameric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

E-3. Explanation of Columns.

a. Illustration. This column is divided as follows:

- (1) Figure Number. Indicates the figure number of the illustration in which the item is shown.
- (2) Item Number. The number used to identify item called out in the illustration.

b. Source, Maintenance, and Recoverability (SMR) Codes.

(1) Source Code. Source codes indicate the manner of acquiring support items for maintenance, repair, or overhaul of end items. Source codes are entered in the first and second positions of the Uniform SMR Code format as follows:

<u>Code</u>	<u>Definition</u>
PA -	Item procured and stocked for anticipated or known usage.

- PB - Item procured and stocked for insurance purpose because essentially dictates that a minimum quantity be available in the supply system.
- PC - Item procured and stocked and which otherwise would be coded PA except that it is deteriorative in nature.
- PD - Support item, excluding support equipment, procured for initial issue or outfitting and stocked only for subsequent or additional initial issues or outfittings. Not subject to automatic replenishment.
- PE - Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair activities.
- PF - Support equipment which will not be stocked but which will be centrally procured on demand.
- PG - Item procured and stocked to provide for sustained support for the life of the equipment. It is applied to an item peculiar to the equipment which, because of probable discontinuance or shutdown of production facilities, would prove uneconomical to reproduce at a later time.
- KD - An item of a depot overhaul/repair kit and not purchased separately. Depot kit defined as a kit that provides items required at the time of overhaul or repair.
- KF - An item of a maintenance kit and not purchased separately. Maintenance kit defined as a kit that provides an item that can be replaced at organizational or intermediate levels of maintenance.
- KB - Item included in both a depot overhaul/repair kit and a maintenance kit.
- MO - Item to be manufactured or fabricated at organizational level.
- MF - Item to be manufactured or fabricated at the direct support maintenance level.
- MH - Item to be manufactured or fabricated at the general support maintenance level.
- MD - Item to be manufactured or fabricated at the depot maintenance level.
- AO - Item to be assembled at organizational level.
- AF - Item to be assembled at direct support maintenance level.
- AH - Item to be assembled at general support maintenance level.
- AD - Item to be assembled at depot maintenance level.
- XA - Item is not procured or stocked because the requirements for the item will result in the replacement of the next higher assembly.
- XB - Item is not procured or stocked. If not available through salvage, requisition.

- XD - A support item that is not stocked. When required, item will be procured through normal supply channels.

NOTE

Cannibalization or salvage may be used as a source of supply for any items source coded above except those coded XA and XD.

(2) *Maintenance Code.* Maintenance codes are assigned to indicate the levels of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the Uniform SMR Code format as follows:

(a) The maintenance code entered in the third position will indicate the lowest maintenance level authorized to remove, replace, and use the support item. The maintenance code entered in the third position will indicate one of the following levels of maintenance:

<u>Code</u>	<u>Application/Explanation</u>
C	- Crew or operator maintenance performed within organizational maintenance.
O	- Support item is removed, replaced, used at the organizational level.
F	- Support item is removed, replaced, used at the direct support level.
H	- Support item is removed, replaced, used at the general support level.
D	- Support items that are removed, replaced, used at depot, mobile depot, or specialized repair activity only.

(b) The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair (i.e., all authorized maintenance functions). This position will contain one of the following maintenance codes:

<u>Code</u>	<u>Application/Explanation</u>
O	- The lowest maintenance level capable of complete repair of the support item is the organizational level.
F	- The lowest maintenance level capable of complete repair of the support item is the direct support level.
H	- The lowest maintenance level capable of complete repair of the support item is the general support level.
D	- The lowest maintenance level capable of complete repair of the support item is the depot level.
L	- Repair restricted to Specialized Repair Activity.
Z	- Nonreparable. No repair is authorized.
B	- No repair is authorized. The item may be reconditioned by adjusting, lubricating, etc., at the user level. No parts or special tools are procured for the maintenance of this item.

(3) Recoverability Code. Recoverability codes are assigned to support items to indicate the disposition action on unserviceable items. The Recoverability code is entered in the fifth position of the Uniform SMR Code format as follows:

Recoverability

<u>Code</u>	<u>Definition</u>
Z -	Nonreparable item. When unserviceable, condemn and dispose at the level indicated in position 3.
O -	Reparable item. When uneconomically reparable, condemn and dispose at organizational level.
F -	Reparable item. When uneconomically reparable, condemn and dispose at the direct support level.
H -	Reparable item. When uneconomically reparable, condemn and dispose at the general support level.
D -	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal not authorized below depot -level.
L -	Reparable item. Repair, condemnation, and disposal not authorized below depot/specialized repair activity level.
A -	Item requires special handling or condemnation procedures because of specific reasons (i.e., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

c. National Stock Number. Indicates the national stock number assigned to the item and will be used for requisitioning.

d. Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.

NOTE: When a stock number item is requisitioned, the repair part received may have a different part number than the part being replaced.

e. *Federal Supply Code for Manufacturer (FSCM)*. The FSCM is a 5-digit numeric code listed in SB 708-42 which is used to identify the manufacturer, distributor, or Government agency, etc.

f. *Description*. Indicates the Federal item name and, if required, a minimum description to identify the item. Items that are included in kits and sets are listed below the name of the kit or set with the quantity of each item in the kit or set indicated in the quantity incorporated in unit column. In the Special Tools List, the initial basis of issue (BOI) appears as the last line in the entry for each special tool, and support equipment. When density of equipments supported exceeds density spread indicated in the basis of issue, the total authorization is increased accordingly.

g. Unit of Measure (U/M). Indicates the standard of the basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two character alphabetical abbreviation (e.g., ea, in., pr, etc.). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

h. Quantity Incorporated in Unit. Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in the column in lieu of a quantity indicates that no specific quantity is applicable (e.g., shims, spacers, etc.).

E-4. Special Information.

a. Detailed assembly instructions for items source coded to be assembled are found in this manual. Assembly components are listed immediately following the item to be assembled.

b. Repair parts kits and gasket sets appear as the last entries in the repair parts listing for the figure in which its parts are listed as repair parts.

c. Usable on codes are shown in the description column. Uncoded items are applicable to all models.

E-5. How to Locate Repair Parts.

a. When National Stock Number or Part Number is Unknown:

(1) First. Using the maintenance allocation chart, determine the functional subgroup within which the repair part belongs. This is necessary since illustrations are prepared for functional subgroups, and listings are divided into the same groups.

(2) Second. Find the illustration covering the functional subgroup to which the repair part belongs.

(3) Third. Identify the repair parts on the illustration and note the illustration figure and item number of the repair part.

(4) Fourth. Using the Repair Parts Listing, find the figure and item number noted on the illustration.

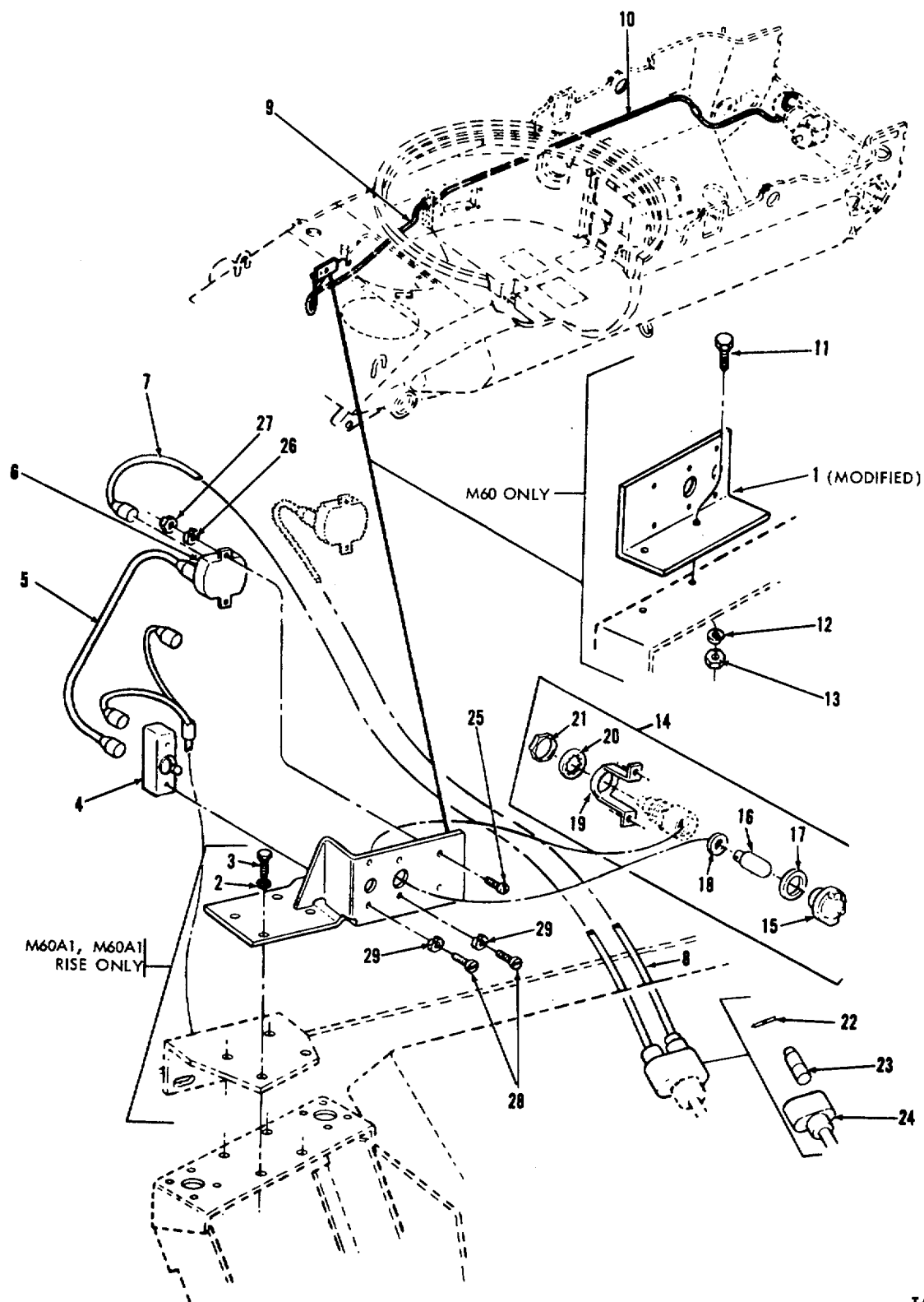
b. *When National Stock Number or Part Number is Known.*

(1) First. Using the Index of National Stock Numbers and Part Numbers, find the pertinent National Stock number or part number. This index is in ascending NIIN sequence followed by a list of part numbers in ascending alphameric sequence, cross-referenced to the illustration figure number and item number.

(2) Second. After finding the figure and item number, locate the figure and item number in the repair parts list.

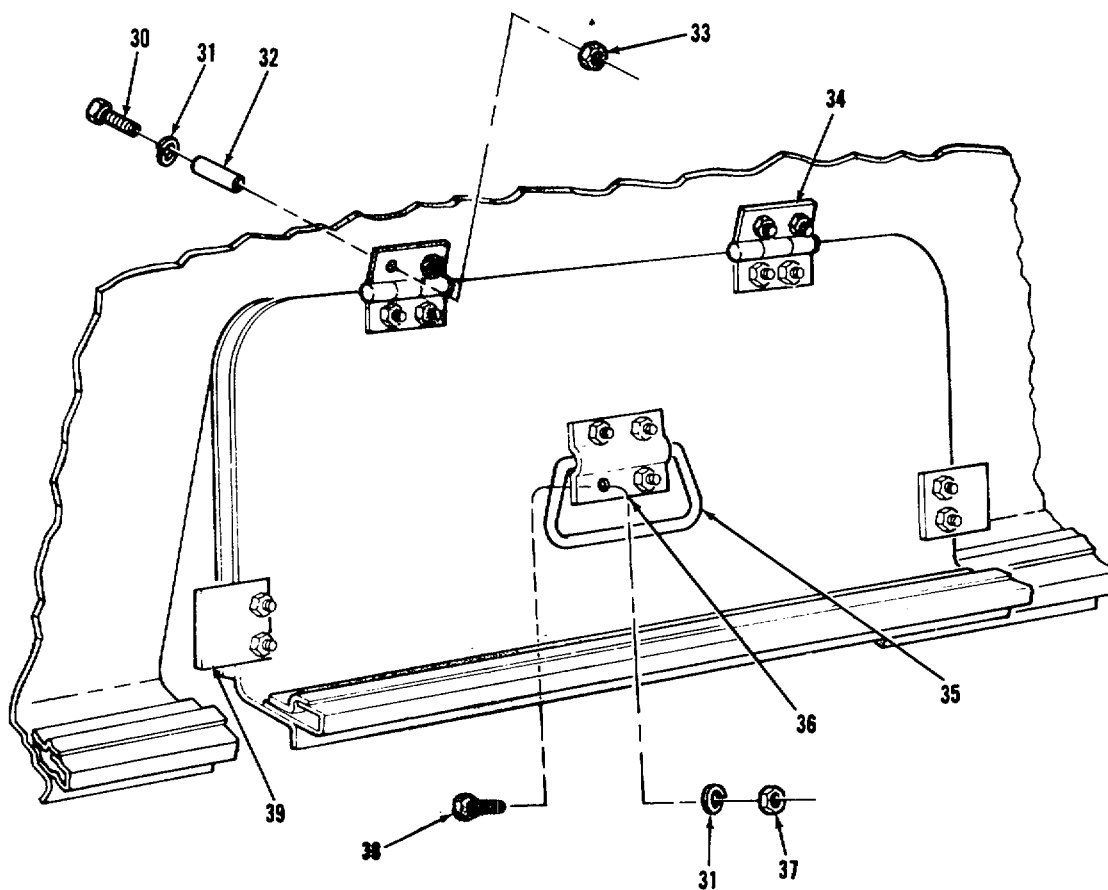
c. Abbreviations.

<u>Abbreviations</u>	<u>Explanation</u>
ASSY	assembly
DIA	diameter
EA	each
FT	feet
L	left
MTG	mounting
NO.	number
NOS.	numbers
OPT	optional
P/N	part number
R	right
SER	serial
V	variable



TA170095

Figure E-1. Power takeoff electrical switch, cables, and related parts (sheet 1 of 2).



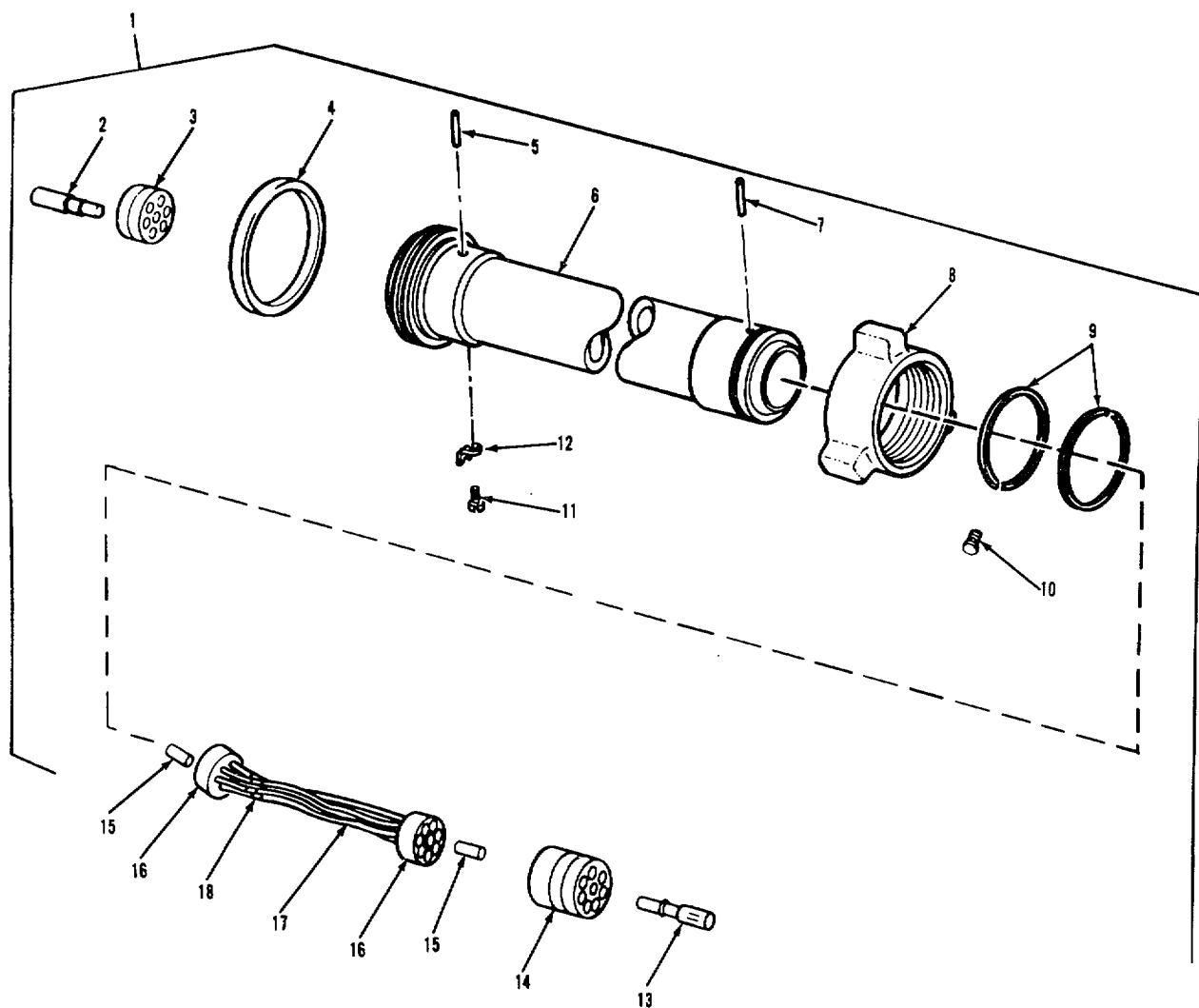
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Figure E-1. Power takeoff electrical switch, cables, and related parts (sheet 2 of 2).

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 06 ELECTRICAL SYSTEM GROUP: 0608 POWER TAKE-OFF ELECTRICAL SWITCH, CABLES, AND RELATED PARTS		
E-1	1	PAOZZ	5340-01-037-5251	10951613	19207	BRACKET: HYDRAULIC PUMP CONTROLEA 1 PANEL		
E-1	2	PAOZZ	5310-00-550-1130	MS35333-40	96906	WASHER, LOCK: CONTROL PANEL..... BRACKET (M60A1 ONLY)	EA	4
E-1	3	PAOZZ	5305-00-068-0514	MS90727-7	96906	SCREW, CAP, HEXAGON HEAD: CON-..... TROL PANEL BRACKET (M60A1 ONLY)	EA	4
E-1	4	PAOZZ	5930-00-296-6318	MS39061-1	96906	SWITCH, TOGGLE: HYDRAULIC PUMP.....	EA	1
E-1	5	PAOZZ	2590-00-493-9010	10951610	19207	LEAD, ELECTRICAL: CONTROL PANEL.....	EA	1
E-1	6	PAOZZ	5925-00-026-4767	M13516/1-1	81349	CIRCUIT BREAKER: CONTROL PANEL.....	EA	1
E-1	7	PAOZZ	2590-00-414-6424	10951609	19207	CABLE ASSEMBLY: CONTROL PANEL.....	EA	1
E-1	8	PAOZZ		8762797	19207	LEAD, ELECTRICAL: CONTROL PANEL.....	EA	1
E-1	9	PAOZZ	2590-00-493-9046	10951612	19207	CABLE ASSEMBLY: POWER TAKE-OFF CONTROL	EA	1
E-1	10	PAOZZ	2590-00-491-6864	10951611	19207	LEAD, ELECTRICAL: POWER TAKE-OFF TO BULKHEAD	EA	1
E-1	11	PAOZZ	5305-00-068-7837	MS90728-5	96906	SCREW, CAP, HEXAGON HEAD: CON-..... TROL PANEL TO BRACKET (M60 ONLY)	EA	2
E-1	12	PAOZZ	5310-00-109-0786	MS35335-33	96906	WASHER, LOCK: CONTROL PANEL TO..... BRACKET (M60 ONLY)	EA	4
E-1	13	PAOZZ	5310-00-761-6882	MS51967-2	96906	NUT, PLAIN, HEXAGON: CONTROL..... PANEL TO BRACKET (M60 ONLY)	EA	2
E-1	14	PAOOO	6210-00-699-9457	8376499	19207	LAMP ASSEMBLY: HYDRAULIC PUMP..... INDICATOR	EA	1
E-1	15	PAOZZ	6210-00-299-5564	7358622	19207	LENS, RED: HYDRAULIC PUMP..... INDICATOR LAMP	EA	1
E-1	16	PAOZZ	6240-00-266-9940	MS25231-1829	96906	LAMP, INCANDESCENT: HYDRAULIC..... PUMP INDICATOR	EA	1
E-1	17	PAOZZ	5330-00-297-6329	7358626	19207	PACKING, PREFORMED: HYDRAULIC..... PUMP INDICATOR LAMP	EA	1
E-1	18	XAOZZ	5303-00-143-7002	11605388	19207	GASKET: HYDRAULIC PUMP INDI-..... CATOR LAMP	EA	1
E-1	19	XAOZZ	5340-00-119-3900	7358623	19207	BRACKET: HYDRAULIC PUMP..... INDICATOR LAMP	EA	1
E-1	20	XAOZZ	5310-00-197-4508	7358625	19207	WASHER: HYDRAULIC PUMP..... INDICATOR LAMP	EA	1
E-1	21	XAOZZ	5975-00-588-0387	7358624	19207	NUT: HYDRAULIC PUMP..... INDICATOR LAMP	EA	1
E-1	22	PAOZZ	5935-00-214-0904	7982907	19207	CONNECTOR: CONTROL PANEL.....	EA	1
E-1	23	PAOZZ	5935-00-833-8561	8338561	19207	SHELL, MALE, SINGLE: CONTROL PANEL..	EA	1
E-1	24	PAOZZ	5935-00-006-9844	7982404	19207	CONNECTOR ASSEMBLY: CONTROL..... PANEL	EA	1
E-1	25	PAOZZ	5305-00-984-6194	MS35206-247	96906	SCREW, MACHINE: CIRCUIT BREAKER TO CONTROL PANEL	EA	2
E-1	26	PAOZZ	5310-00-045-3299	MS35338-42	96906	WASHER, LOCK: CIRCUIT BREAKER TO CONTROL PANEL	EA	2

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 0608 POWER TAKE-OFF ELECTRICAL SWITCH, CABLES AND RELATED PARTS- CONTINUED		
E-1	27	PAOZZ	5310-00-934-9757	MS35649-282	96906	NUT, PLAIN, HEXAGON: CIRCUIT	EA	2
E-1	28	PAOZZ	5305-00-984-6193	M5S35206-245	96906	BREAKER TO CONTROL PANEL	EA	4
E-1	29	PAOZZ	5310-00-559-0070	MS35333-38	96906	SCREW, MACHINE	EA	4
E-1	30	PAOZZ	5305-00-267-8954	MS90727-10	96906	WASHER, LOCK	EA	4
						SCREW, CAP, HEXAGON HEAD: ACCESS ..	EA	12
						DOOR HINGE AND STOP ATTACHING		
E-1	31	PAOZZ	5310-00-582-5965	MS35338-44	96906	WASHER, LOCK: ACCESS DOOR HINGE, ...	EA	16
						STOP AND GRIP ATTACHING		
E-1	32	PAOZZ	5365-01-037-5393	10934408	19207	SLEEVE: ACCESS DOOR HINGE AND STOP	EA	
12								
E-1	33	PAOZZ	5310-00-768-0319	MS51968-2	96906	NUT, PLAIN, HEXAGON: ACCESS DOOR.....	EA	12
						HINGE AND STOP ATTACHING		
E-1	34	PAOZZ	5340-00-442-6051	10911863	19207	HINGE, BUTT: ACCESS DOOR.....	EA	2
E-1	35	PAOZZ	5340-00-135-6574	7970617	19207	GRIP: ACCESS DOOR	EA	1
E-1	36	PAOZZ	5340-00-136-4763	10915467	19207	RETAINER, STRAP: ACCESS DOOR	EA	1
E-1	37	PAOZZ	5310-00-269-3465	1MS27130S38	96906	NUT, PLAIN, COUNTERSUNK HEAD:	EA	4
						ACCESS DOOR GRIP RETAINER		
E-1	38	PAOZZ	5305-00-068-0515	MS90727-8	96906	SCREW, CAP, HEXAGON HEAD: ACCESS ..	EA	4
						DOOR GRIP RETAINER		
E-1	39	PAOZZ	2510-00-198-7552	10915466	19207	STOP: ACCESS DOOR	EA	2

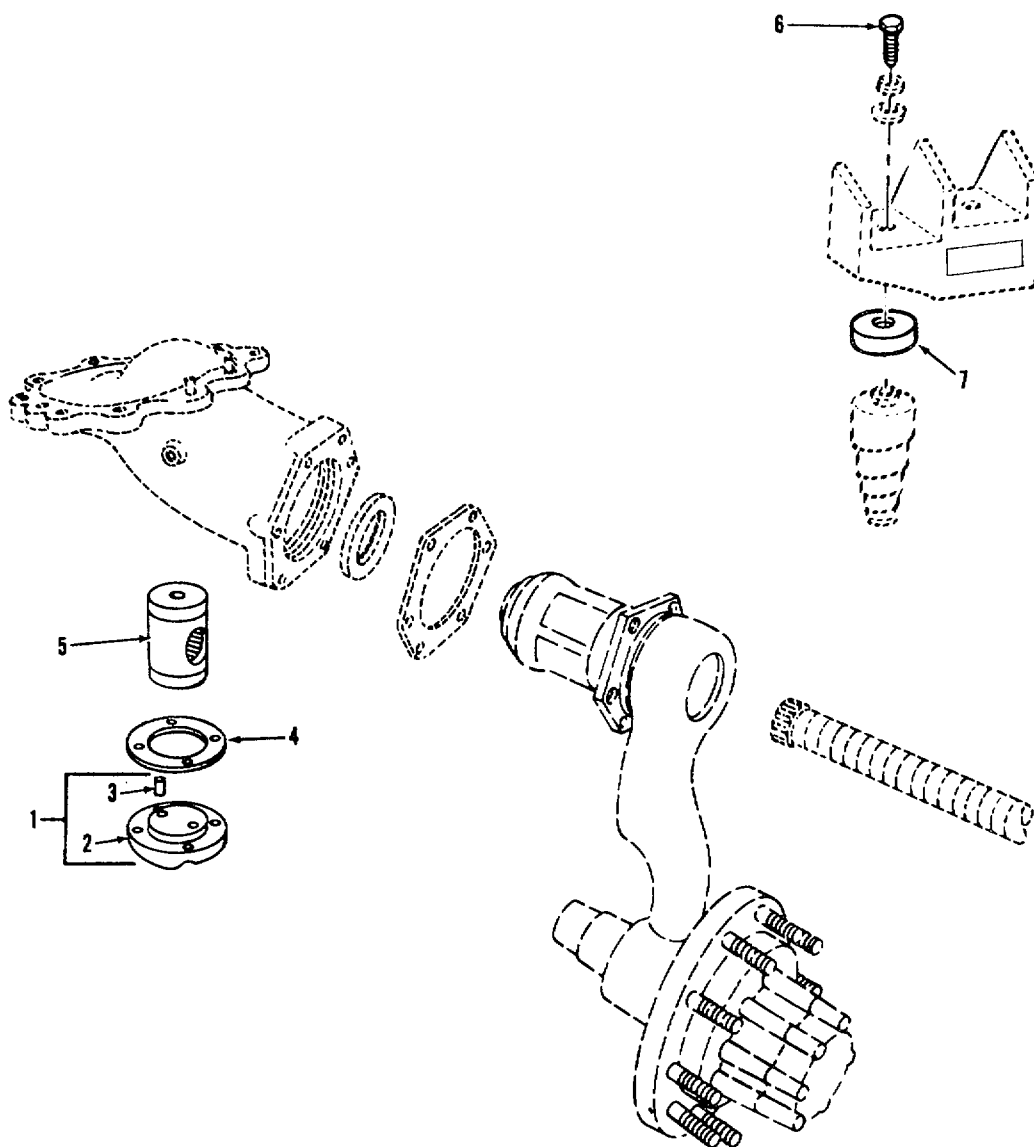
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TA170097

Figure E-2. Headlamp adapter assembly.

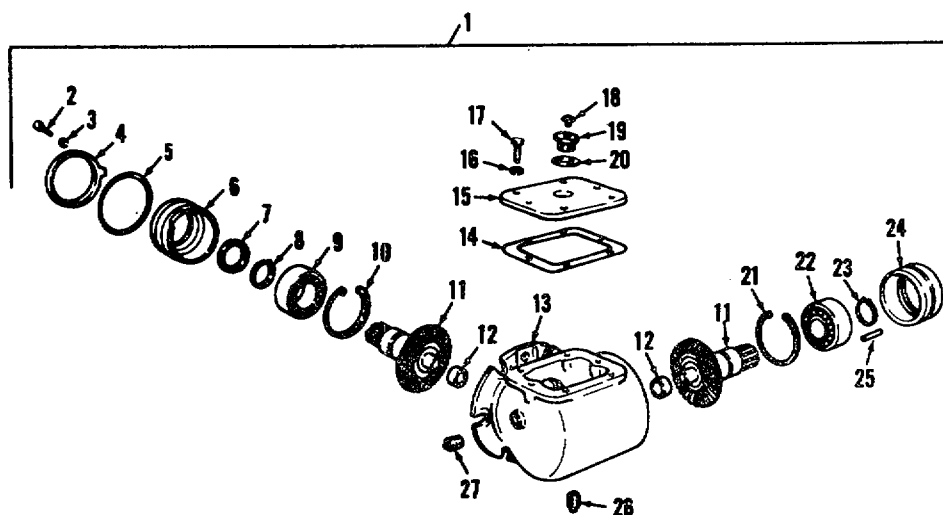
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 0609 HEADLAMP ADAPTER ASSEMBLY		
E-2	1	PAOZZ	5935-01-037-5395	10934359	19207	ADAPTER ASSEMBLY: HEADLAMP..... MOUNTING	EA	2
E-2	2	PAOZZ	5999-00-485-8954	7716520	19204	CONTACT, ELECTRICAL: HEADLAMP..... BASE	EA	7
E-2	3	PAOZZ	5935-00-771-8192	7723475	19207	INSERT: HEADLAMP BASE	EA	1
E-2	4	PAOZZ	2590-00-047-4096	7972333	19207	GASKET: HEADLAMP BASE	EA	1
E-2	5	PAOZZ	5315-00-826-4368	MS35677-4	96906	PIN: HEADLAMP BASE	EA	1
E-2	6	XAOZZ	6220-01-K60-2687	10940235	19207	ADAPTER: HEADLAMP	EA	1
E-2	7	PAOZZ	5315-00-826-4370	MS35677-2	96906	PIN: HEADLAMP MOUNTING ADAPTER.....	EA	1
E-2	8	PAOZZ	5310-00-797-2040	7972351	19207	NUT, ADJUSTMENT: HEADLAMP.....	EA	1
E-2	9	PAOZZ		MS16626-4196	96906	RING: HEADLAMP MOUNTING.....	EA	2
E-2	10	PAOZZ	5320-00-543-3085	MS35743-001	96906	RIVET: HEADLAMP MOUNTING	EA	1
E-2	11	PAOZZ	5305-00-984-4977	228228	21450	ADAPTER SCREW, LOCKWASHER: HEADLAMP	EA	2
E-2	12	PAOZZ	5340-00-647-3933	7739925	19207	BASE CLIP: SPRING TENSION	EA	1
E-2	13	PAOZZ	5999-00-485-8955	7716521	19207	CONNECTOR: HEADLAMP MOUNTING..... ADAPTER	EA	7
E-2	14	PAOZZ	5935-00-005-6455	7723474	19207	INSERT: HEADLAMP MOUNTING..... ADAPTER	EA	1
E-2	15	PAOZZ	2920-00-695-6223	7064704	19207	ROD: HEADLAMP	EA	2
E-2	16	PAOZZ	5340-00-772-2322	7722322	19207	GROMMET: HEADLAMP HOLDER.....	EA	2
E-2	17	PAOZZ	6145-00-152-6499	M13486/1-5	81349	CABLE: BASE ASSEMBLY	FT V	
E-2	18	PAOZZ	9905-00-752-4649	7524649	19207	MARKER, BAND: HEADLAMP BASE	EA	7



TA170098

Figure E-3. Torsion bar anchor, volute spring spacer and related parts.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-3	1	PAOZZ	2590-01-043-8115	10952230	19207	GROUP: 13 WHEELS AND TRACKS GROUP: 1301 TORSION BAR ANCHOR, VOLUTE SPRING SPACER, AND RELATED PARTS COVER ASSEMBLY: TORSION BAR..... ANCHOR	EA,	4
E-3	2	XAOZZ	10952229	19207		COVER: TORSION BAR ANCHOR COVER ... ASSY	EA	1
E-3	3	PAOZZ	5315-00-282-6887	AN122733	88044	PIN, DOWEL: TORSION BAR ANCHOR COVER	EA	1
E-3	4	PAOZZ	5330-00-701-4010	7014010	19207	GASKET: TORSION BAR COVER.....	EA	4
E-3	5	PAOZZ	2530-00-921-5020	10952231	19207	ANCHOR: TORSION BAR	EA	4
						GROUP: 16 SPRINGS AND SHOCK ABSORBERS GROUP: 1601 TORSION BAR, ANCHOR, VOLUTE SPRING SPACER, AND RELATED PARTS		
E-3	6	PAOZZ	5305-00-726-2556	MS90727-169	96906	SCREW, CAP, HEXAGON HEAD: VOLUTE ... SPRING	EA	4
E-3	7	PAOZZ	5340-01-037-5420	12257291	19207	SPACER: VOLUTE SPRING.....	EA	4

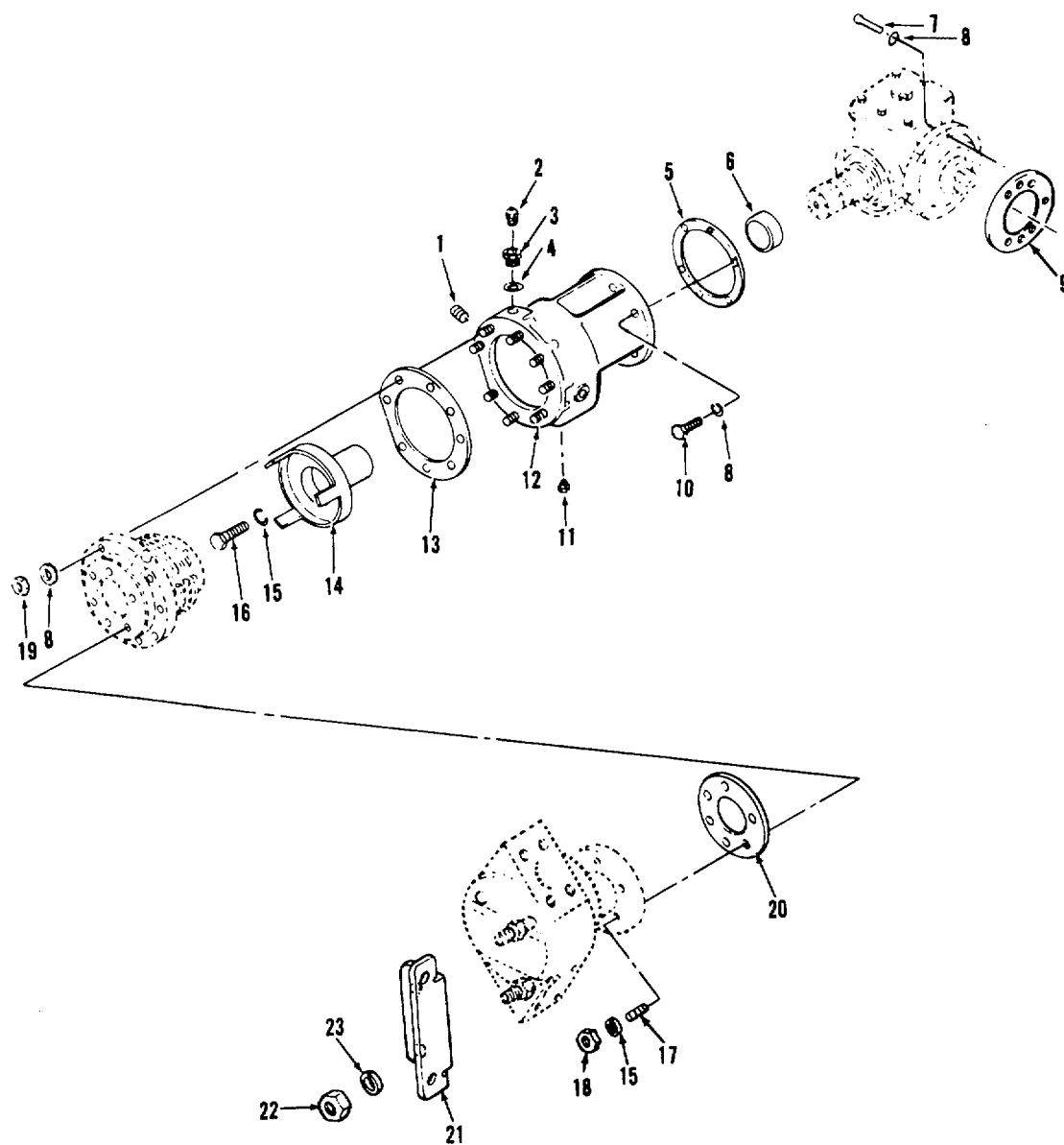


TA170099

Figure E-4. Power takeoff right-angle drive.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-4	1	PAOFF	2520-00-230-3612	10940662	19207	GROUP: 20 POWER TAKE-OFF GROUP: 20041 POWER TAKE-OFF ASSEMBLY		
E-4	2	PAFZZ	5305-00-958-4354	MS35207-230	96906	POWER TAKE-OFF ASSEMBLY:..... RIGHT-ANGLE DRIVE	EA	1
E-4	3	PAFZZ	5310-00-045-4007	MS35330-41	96906	SCREW, MACHINE: LOCK RING TO RETAINER	EA	2
E-4	4	PAFZZ	2520-00-653-9212	7383693	19207	WASHER LOCK: LOCK RING TO RETAINER	EA	2
E-4	5	PAFZZ	5330-00-194-3726	MS28775-235	96906	RING: RETAINER LOCK.....	EA	1
E-4	6	PAFZZ	2520-00-653-9215	7383697	19207	PACKING, PREFORMED: RETAINER..... SEAL HOUSING	EA	1
E-4	7	PAFZZ	5330-00-707-8823	8728125	19207	RETAINER: DRIVE GEAR SET..... ADJUSTMENT	EA	1
E-4	8	PAFZZ		586325	21450	SEAL: DRIVE GEAR SET RETAINER	EA	1
E-4	9	PAFZZ	3110-00-555-7227	714248	21450	RING, SNAP: GEAR SET PINION..... BEARING, OUTER	EA	1
E-4	10	PAFZZ	5365-00-275-6104	586229	21450	BEARING, BALL, ANNULAR: DRIVE..... GEAR SET, OUTER	EA	1
E-4	11	PAFZZ	2520-00-653-9211	10940664	19207	RING, SNAP: GEAR SET PINION..... BEARING, INNER	EA	1
E-4	12	PAFZZ	3110-00-902-1657	709513		GEARSHAFT SET, BEVEL: RIGHT ANGLE DRIVE	EA	1
E-4	13	XAFZZ		7383723	19207	21450BEARING: NEEDLE, DRIVE GEAR SET	EA	
E-4	14	PAFZZ	5330-00-653-9545	7699891	19207	HOUSING: RIGHT-ANGLE DRIVE.....	EA	1
E-4	2					GASKET: HOUSING COVER PLATE	EA	1

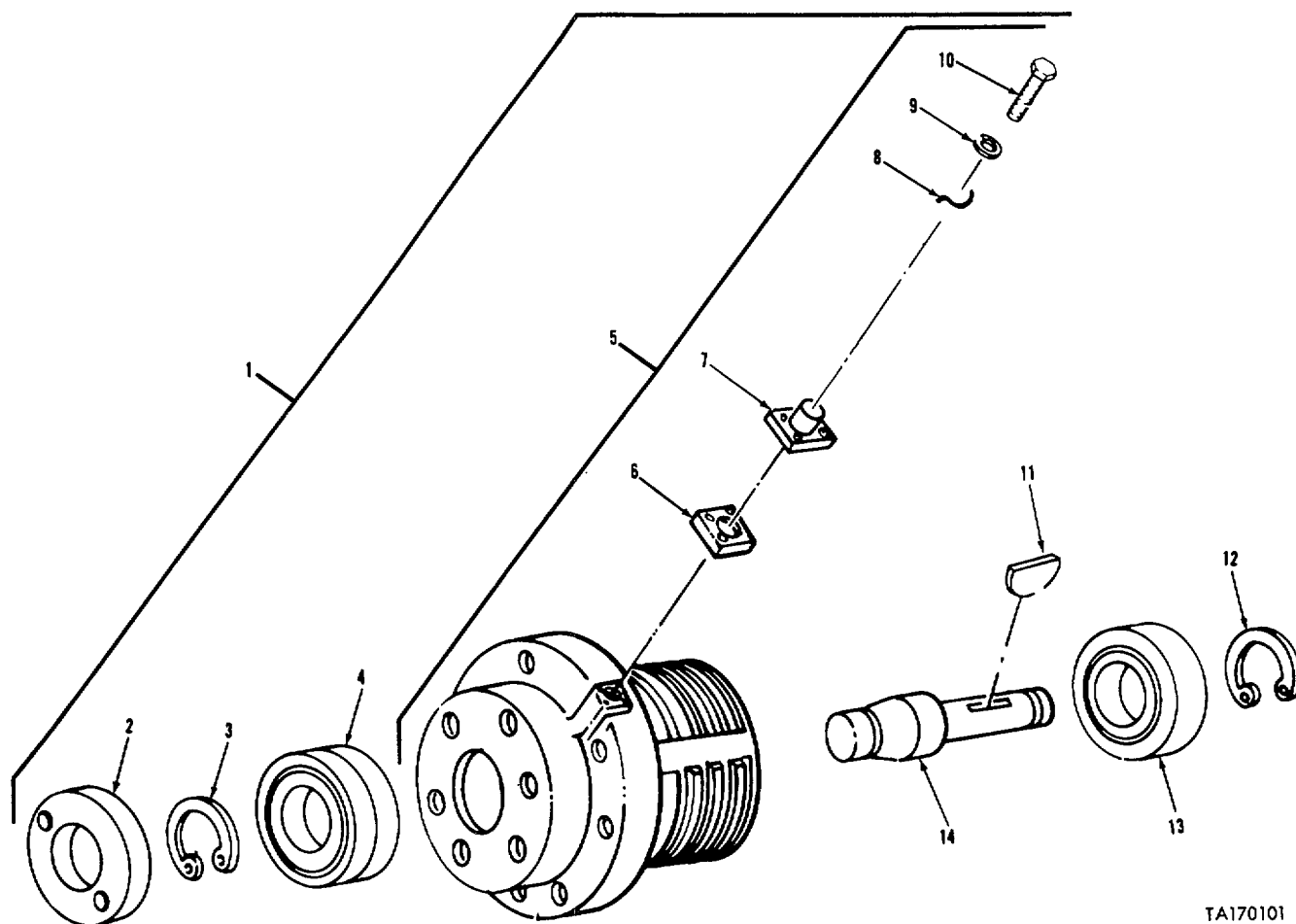
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 2004 POWER TAKE-OFF ASSEMBLY - CONTINUED		
E-4	15	PAFZZ	2520-00-230-3611	10873964	19207	PLATE: HOUSING TOP COVER.....	EA	1
E-4	16	PAFZZ	5310-00-407-9566	MS35338-45	96906	WASHER, LOCK: HOUSING TOP COVER PLATE	EA	6
E-4	17	PAFZZ	5306-00-225-8499	MS90725-34	96906	SCREW, CAP, HEXAGON HEAD: HOUSING TOP COVER	EA	6
E-4	18	PAOZZ	4730-00-826-8465	MS35670-2	96906	FITTING, LUBRICATION: RIGHT-ANGLE DRIVE PRESSURE RELEASE	EA	1
E-4	19	PAOZZ	4730-00-653-9537	10940663	19207	PLUG, MACHINE THREAD: RIGHT-ANGLE .. DRIVE FILLER	EA	1
E-4	20	PAOZZ	5330-00-542-0981	MS35769-18	96906	GASKET: FILLER PLUG	EA	1
E-4	21	PAFZZ		586272	21450	RING, SNAP: GEAR SET PINION..... BEARING, INNER	EA	1
E-4	22	PAFZZ	3110-01-007-0193	714249	99167	BEARING, BALL, ANNULAR: DRIVE..... GEAR SET, OUTER	EA	1
E-4	23	PAFZZ	5365-00-803-7304	586328	21450	RING, SNAP: GEAR SET PINION..... REARING, OUTER	EA	1
E-4	24	PAFZZ	3130-00-417-2556	7383692	19207	RETAINER ASSEMBLY: DRIVE GEAR SET .. ADJUSTMENT	EA	1
E-4	25	PAFZZ		MS39086-159	96906	PIN, SPRING	EA	1
E-4	26	PAFZZ	4730-01-K80-2999	502400		2145ePLUG, PIPE, MAGNETIC: RIGHT-ANGLE	EA	EA
I								
E-4	27	PAFZZ	4730-00-221-2137	MS20913-2S	96906	DRIVE HOUSING DRAIN PLUG, PIPE: RIGHT-ANGLE DRIVE OIL..... LEVEL	EA	1



TA170100

Figure E-5. Right-angle drive, clutch, and hydraulic pump, mounting bracket and related parts.

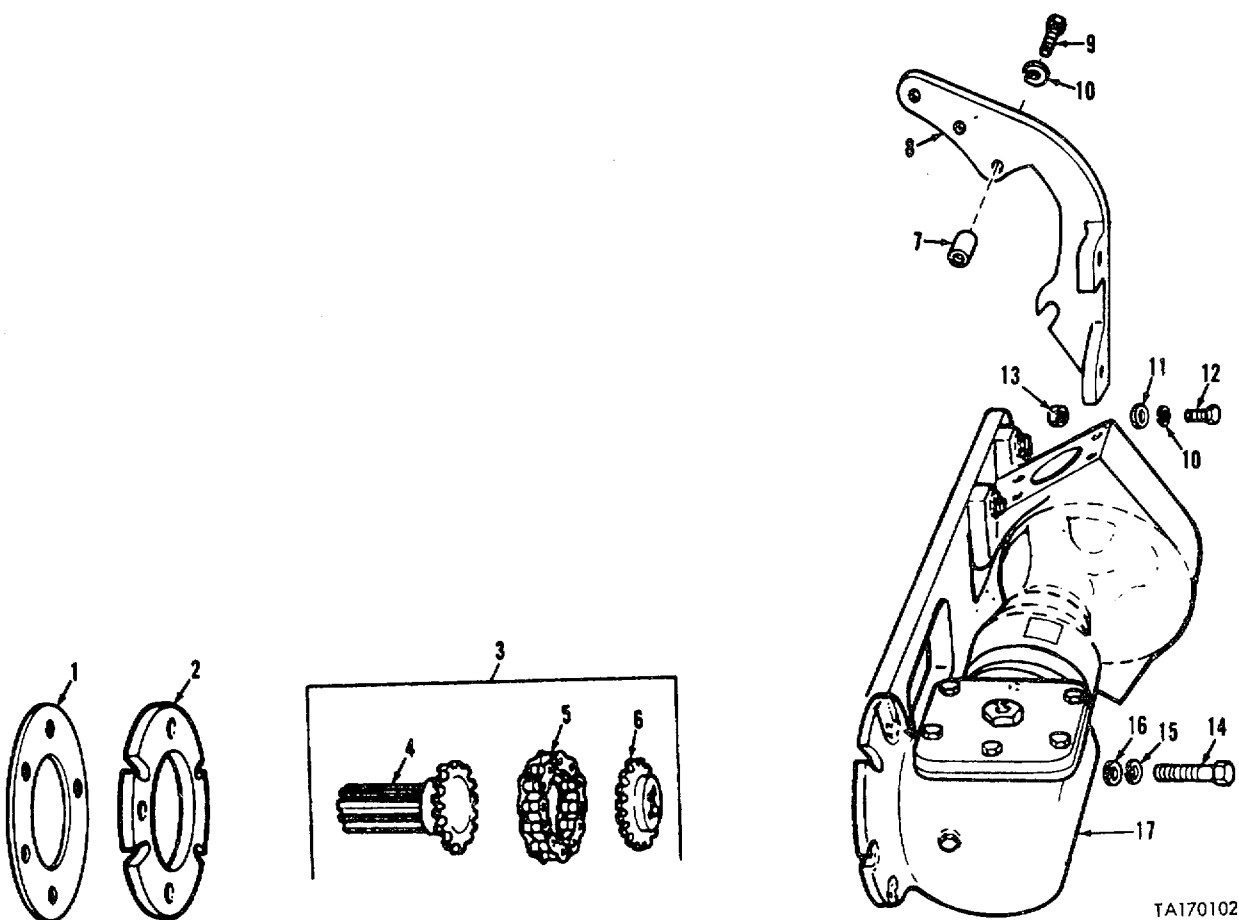
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 20042 RIGHT-ANGLE DRIVE, CLUTCH, AND HYDRAULIC PUMP, MOUNTING BRACKET AND RELATED PARTS		
E-5	1	PAOZZ	4730-00-221-2137	MS20913-2S	96906	PLUG, PIPE: TRANSMISSION OIL LEVEL.....	EA	1
E-5	2	PAOZZ	4730-00-826-6465	MS35670-2	96906	FITTING, LUBRICATION: POWER TAKE-..... OFF RELIEF PLUG	EA	1
E-5	3	PAOZZ	4730-00-653-9537	10940663	19207	PLUG: POWER TAKE-OFF RELIEF FITTING	EA	1
E-5	4	PAOZZ	5330-00-542-0981	MS35769-18	96906	GASKET, METALLIC: POWER TAKE-OFF RELIEF PLUG	EA	1
E-5	5	PAOZZ	5330-00-653-9544	7383695	19207	GASKET, RUBBER: RIGHT ANGLE DRIVE ... CLUTCH HOUSING TO POWER TAKE-OFF	EA	1
E-5	6	PAOZZ	5330-00-902-8483	10940820	19207	SEAL, PLAIN, ENCASED: CLUTCH GEAR	EA	1
E-5	7	PAOZZ	5306-00-226-4828	MS90728-35	96906	SCREW, CAP, HEXAGON HEAD: RIGHT ANGLE DRIVE MTG	EA	2
E-5	8	PAOZZ	5310-00-407-9566	MS35338-45	96906	WASHER, LOCK.....	EA	16
E-5	9	PAOZZ	5330-00-653-9546	7383694	19207	GASKET, NONMETALLIC: RIGHT ANGLE..... DRIVE TO MOUNT	EA	1
E-5	10	PAOZZ	3505-00-225-9081	MS90725-36	96906	SCREW, CAP, HEXAGON HEAD: POWER ... TAKE-OFF TO CLUTCH HOUSING	EA	6
E-5	11	PAOZZ	4730-00-045-9769	MS49006-6	96906	PLUG: CLUTCH HOUSING DRAIN.....	EA	1
E-5	12	PBOZZ	2520-00-178-0466	10940660	19207	HOUSING ASSEMBLY: CLUTCH.....	EA	1
E-5	13	PAOZZ	5330-00-907-9002	10940670	19207	GASKET: CLUTCH HOUSING.....	EA	1
E-5	14	PAOZZ	2520-00-178-0465	10940754	19207	SPIDER: CLUTCH HOUSING.....	EA	1
E-5	15	PAOZZ	5310-00-637-9541	MS35338-46	96906	WASHER, LOCK: SPIDER TO GEAR SET..... CLUTCH TO PUMP	EA	7
E-5	16	PAOZZ	5305-00-269-4511	MS90725-63	96906	SCREW, CAP, HEXAGON HEAD: SPIDER.... TO GEAR SET	EA	1
E-5	17	PAOZZ	5307-00-691-6833	10940672	19207	STUD, PLAIN: CLUTCH TO PUMP.....	EA	6
E-5	18	PAOZZ	5310-00-732-0559	MS51968-8	96906	NUT, PLAIN, HEXAGON: CLUTCH TO..... PUMP	EA	6
E-5	19	PAOZZ	5310-00-880-7746	IMS51968-5	96906	NUT, PLAIN, HEXAGON: CLUTCH TO..... HOUSING	EA	8
E-5	20	PAOZZ	5330-00-907-9004	10940669	19207	GASKET: CLUTCH TO PUMP.....	EA	1
E-5	21	PAOZZ	5340-00-417-2822	10940671	19207	BRACKET: PUMP MTG.....	EA	1
E-5	22	PAOZZ	5310-00-763-8905	MS51968-20	96906	NUT, PLAIN, HEXAGON: PUMP TO..... BRACKET	EA	2
E-5	23	PAOZZ	5310-00-518-7720	MS35338-50	96906	WASHER, LOCK: PUMP TO BRACKET.....	EA	2
					E-19			



TA170101

Figure E-6. Hydraulic right-angle drive magnetic clutch.

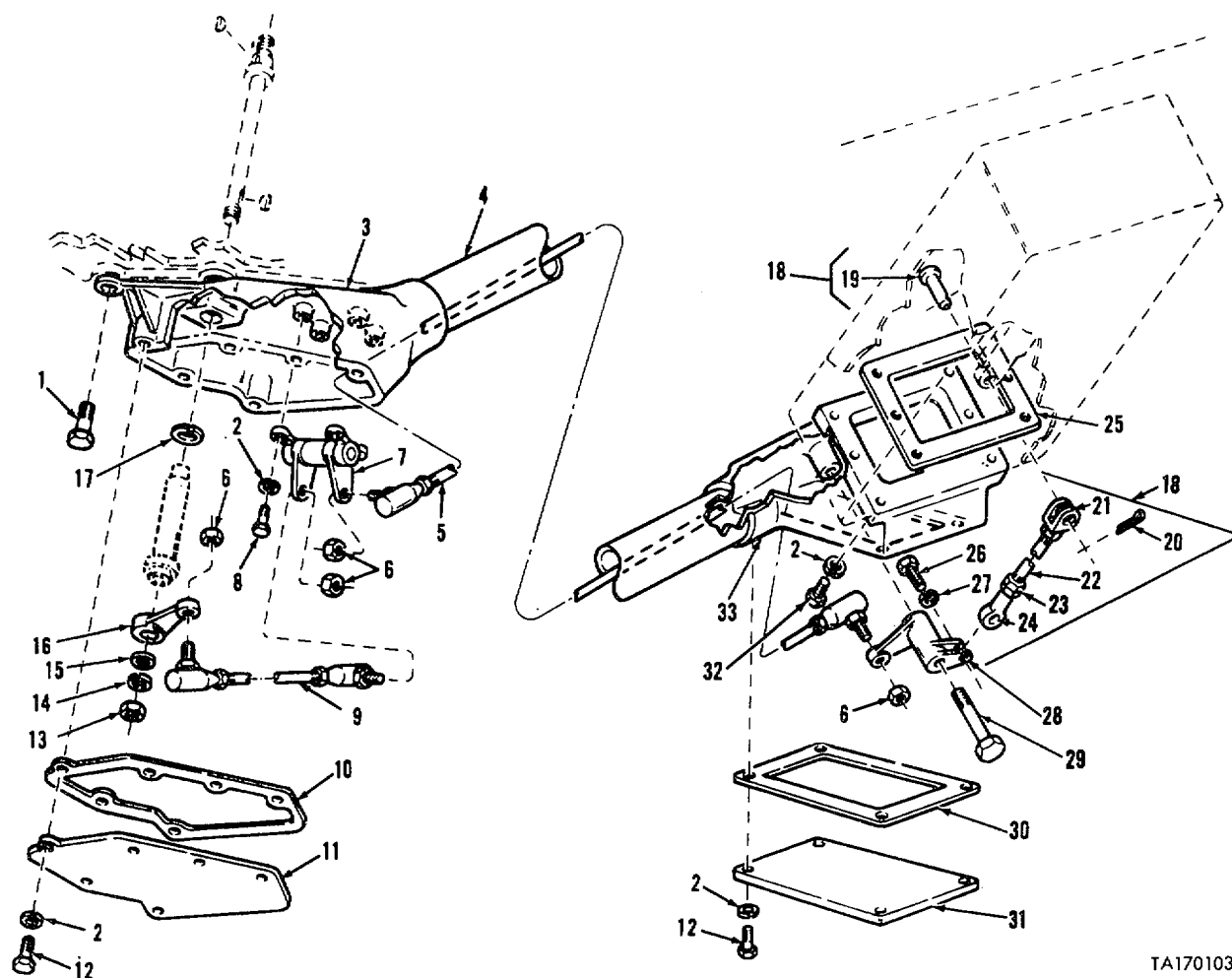
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 20045 HYDRAULIC RIGHT-ANGLE DRIVE MAGNETIC CLUTCH		
E-6	1	PAOFF	2520-00-907-8971	10940771	19207	CLUTCH ASSEMBLY HYDRAULIC PUMP,.... MAGNETIC	EA	1
E-6	2	PAFZZ	5365-00-903-6668	10940789	19207	RING: BEARING, SHAFT	EA	1
E-6	3	PAFZZ		586325		21450RING, SNAP: CLUTCH SHAFT BEARING	EA	
E-6	4	PAFZZ	3110-00-912-6271	10947118	19207	BEARING, CLUTCH SHAFT	EA	1
E-6	5	PAFFF	2520-00-245-1164	10940623	19207	CLUTCH: MAGNETIC	EA	1
E-6	6	PAFZZ	5330-00-939-0666	MS52000-3	96906	GASKET, RUBBER: CLUTCH.....	EA	1
E-6	7	PAFZZ	5935-00-772-0499	7720499	19207	RECEPTACLE CONNECTOR ASSEMBLY: MAGNETIC.....	EA	1
E-6	8	PAFZZ	MS20995N32-8	98906	WIRE,	LOCKING: RECEPTACLE TO.....	EA	V
E-6	9	PAFZZ	5310-00-045-4007	MS35338-41	98906	CLUTCH WASHER, LOCK: RECEPTACLE TO	EA	4
E-6	10	PAFZZ	5305-00-579-2139	MS35265-30	98906	CLUTCH SCREW, MACHINE; RECEPTACLE TO	EA	4
E-6	11	PAFZZ	5315-00-256-4791	MS20086-255	96906	CLUTCH KEY, MACHINE: CLUTCH SHAFT.....	EA	1
E-6	12	PAFZZ		586322		21450 RING, SNAP: CLUTCH SHAFT	EA	
E-6	13	PAFZZ	3110-00-109-1179	10951608	19207	BEARING BEARING: CLUTCH SHAFT	EA	1
E-6	14	PAFZZ	2520-00-907-9003	10940713	19207	SHAFT: CLUTCH	EA	1



TA170102

Figure E-7. Hydraulic pump side mount and sprocket assembly.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 20044 HYDRAULIC PUMP SIDE MOUNT AND SPROCKET ASSEMBLY		
E-7	1	PAOZZ	5330-00-653-9543	7699926	19207	GASKET: TRANSMISSION COVER MOUNT. SEAL	EA	1
E-7	2	PAOZZ	5365-00-178-3740	10940666	19207	RING: TRANSMISSION COVER MOUNT.....	EA	1
E-7	3	AOOOO		7699894	19207	SPROCKET ASSEMBLY, TRANSMISSION.... MOUNT COUPLING	EA	1
E-7	4	PAOZZ	2520-00-653-9220	7699964	19207	SPROCKET: TRANSMISSION COUPLING	EA	1
E-7	5	PAOZZ	3020-00-653-9535	7044246	19207	CHAIN, ROLLER: COUPLING SPROCKET	EA	1
E-7	6	PAOZZ	2520-00-653-9213	7699927	19207	SPROCKET: RIGHT-ANGLE DRIVE..... COUPLING	EA	1
E-7	7	PAOZZ	5340-00-144-6093	7699818	19207	SPACER: HYDRAULIC PUMP SIDE MOUNT.	EA	4
E-7	8	PAOZZ	2520-00-232-6036	10940698	19207	BRACKET: HYDRAULIC PUMP SIDE MOUNT	EA	1
E-7	9	PAOZZ	5305-00-719-5235	MS90727-114	96906	SCREW, CAP, HEXAGON HEAD: SIDE MOUNT TO TRANSMISSION	EA	4
E-7	10	PAOZZ	5310-00-584-5272	MS353338-48	96906	WASHER, LOCK	EA	6
E-7	11	PAOZZ	5310-00-809-5998	MS27183-18	96906	WASHER, FLAT: POWER TAKE-OFF MOUNT TO BRACKET	EA	2
E-7	12	PAOZZ	5305-00-719-5238	MS90727-115	96906	SCREW, CAP, HEXAGON HEAD: POWER ... TAKE-OFF MOUNT TO BRACKET	EA	2
E-7	13	PAOZZ	5310-00-232-0560	MS51968-14	96906	NUT, PLAIN, HEXAGON: POWER TAKE-OFF MOUNT TO BRACKET	EA	2
E-7	14	PAOZZ	5305-00-709-8526	MS90727-92	96906	SCREW, CAP, HEXAGON HEAD: RIGHT-..... ANGLE DRIVE MOUNT TO TRANSMISSION	EA	5
E-7	15	PAOZZ	5310-00-209-0965	MS35338-47	96906	WASHER, LOCK: RIGHT-ANGLE DRIVE..... MOUNT TO TRANSMISSION	EA	5
E-7	16	PAOZZ	5310-00-809-4085	MS27183-16	96906	WASHER, FLAT: RIGHT-ANGLE DRIVE..... MOUNT TO TRANSMISSION	EA	5
E-7	17	AOOFF	2520-00-230-3613	10940668	19207	POWER TAKE-OFF ASSEMBLY: TRANSMISSION INCLUDES PUMP, CLUTCH, AND POWER TAKE-OFF	EA	1

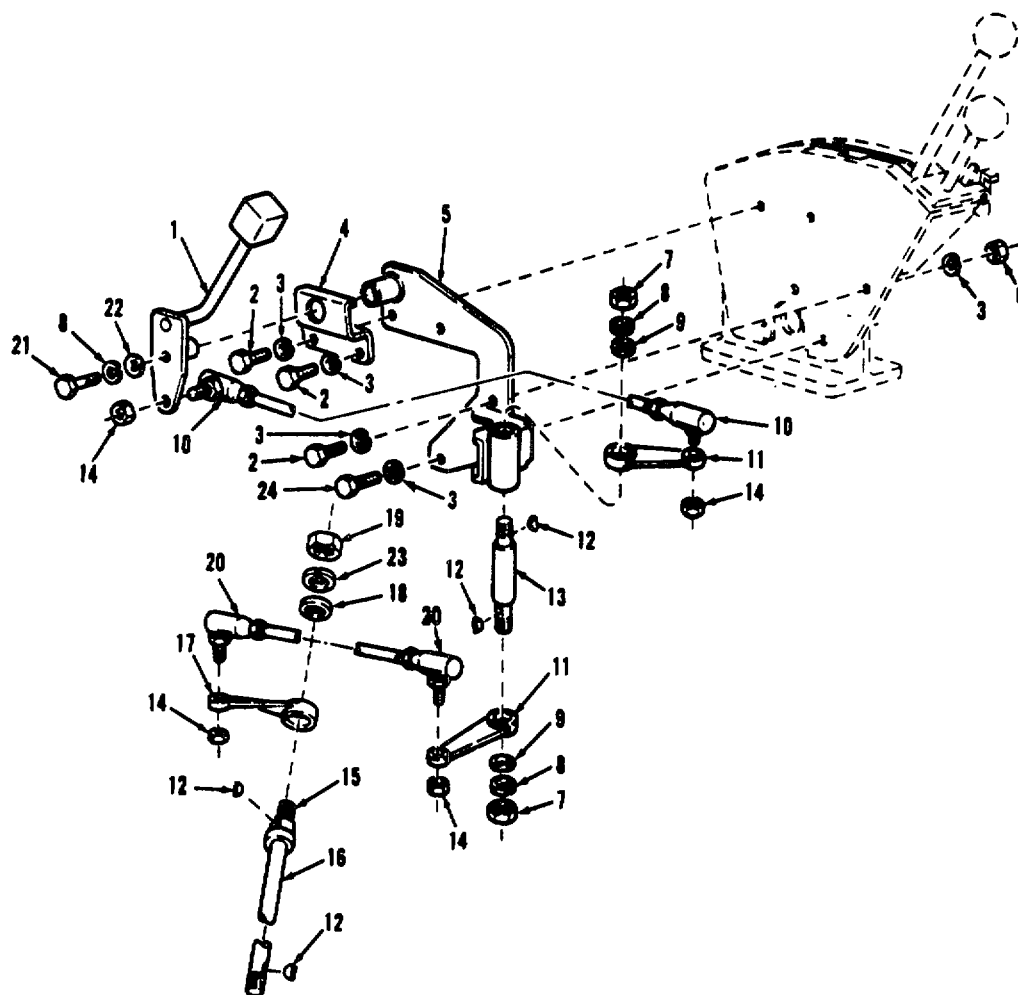


TA170103

Figure E-8. Control Linkage.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-8	1	PAOZZ	5305-00-926-5671	MS90727-216	96906	GROUP: 2006 CONTROL LINKAGE		
E-8	2	PAOZZ	5310-00-959-4675	MS3534D-46	90606	SCREW, CAP, HEXAGON HEAD:	EA	2
E-8	3	PBOZZ	2590-00-079-8668	10884207	19207	GUARD TO TORSION BAR HOUSING AND HULL	EA	20
E-8	4	PBOZZ	2590-00-179-3536	10884196	19207	WASHER, LOCK: CONTROL LINKAGE	EA	1
E-8	5	PAOZZ	2590-00-938-8178	10887738	19207	GUARD: CONTROL LINKAGE.....	EA	1
E-8	6	PAOZZ	5310-00-975-2075	MS35691-21	96906	GUARD: CONTROL LINKAGE.....	EA	1
E-8	7	PAOZZ	2590-00-235-4363	10884184	19207	ROD ASSEMBLY: CONTROL LINKAGE.....	EA	1
						NUT, PLAIN, HEXAGON	EA	4
						BRACKET: CONTROL LINKAGE.....	EA	1

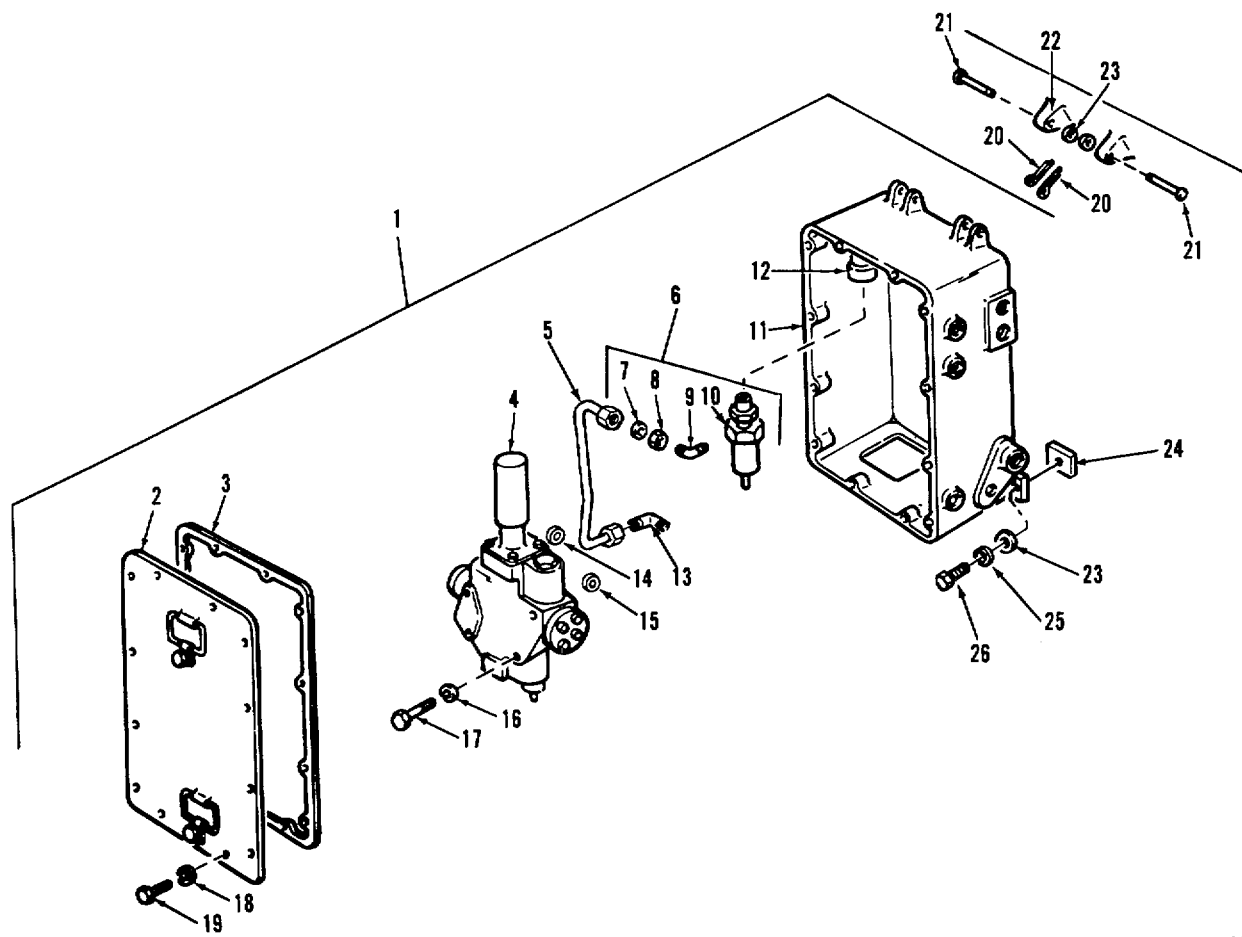
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 2006 CONTROL LINKAGE- CONTINUED		
E-8	8	PAOZZ	5305-00-543-2419	MS90728-61	96906	SCREW, CAP, HEXAGON HEAD: CONTROL LINKAGE, BELLCRANK TO GUARD	EA	4
E-8	9	PAOZZ	2590-00-934-S298	10887737	19207	ROD ASSEMBLY: LOWER SHIFTING LINKAGE	EA	1
E-8	10	PAOZZ	2590-00-806-1178	10884187	19207	GASKET: CONTROL LINKAGE GUARD COVER	EA	1
E-8	11	PBOZZ	2590-00-932-3569	10884179	19207	COVER PLATE: CONTROL LINKAGE GUARD	EA	1
E-8	12	PAOZZ	5305-00-068-0511	MS90728-62	96906	SCREW, CAP, HEXAGON HEAD	EA	10
E-8	13	PAOZZ	5310-00-880-7746	MS51968-5	96906	NUT, PLAIN, HEXAGON: CONTROL..... ARM TO SHAFT	EA	1
E-8	14	PAOZZ	5310-00-407-9566	MS35338-45	96906	WASHER, LOCK: CONTROL ARM TO..... SHAFT	EA	1
E-8	15	PAOZZ	5310-00-081-4219	MS27183-12	96906	WASHER, FLAT: CONTROL ARM TO..... SHAFT	EA	1
E-8	16	PAOZZ	2590-00-934-8256	10887407	19207	ARM, CONTROL: LINKAGE.....	EA	1
E-8	17	PAOZZ	5310-00-262-3548	10885434	19207	WASHER, LOCK: CONTROL LINKAGE	EA	1
E-8	18	PAOOO	2590-00-937-1957	10887736	19207	ROD ASSEMBLY, CONTROL LINKAGE.....	EA	1
E-8	19	PAOZZ	5315-00-891-7878	10915543	19207	PIN, STRAIGHT, HEADED: ROD ASSY	EA	1
E-8	20	PAOZZ	5315-00-839-5822	MS24665-353	96906	PIN, COTTER: ROD ASSY.....	EA	1
E-8	21	XAOZZ		10887479	19207	CLEVIS: CONTROL VALVE ROD ASSY	EA	1
E-8	22	XAOZZ		10884212	19207	ROD: CONTROL VALVE ROD ASSY	EA	1
E-8	23	XAOZZ	5310-00-975-2075	MS35691-21	96906	NUT, PLAIN, HEXAGON: CONTROL..... VALVE ROD ASSY	EA	2
E-8	24	XAOZZ		8741800	19207	ROD END: CONTROL VALVE ROD ASSY.....	EA	1
E-8	25	PAOZZ	2590-00-806-1183	10884217	19207	GASKET: GUARD TO CONTROL VALVE MANIFOLD	EA	1
E-8	26	PAOZZ	5306-00-936-8302	10915544	19207	BOLT, MACHINE: CONTROL VALVE ROD TO LINK ASSY	EA	1
E-8	27	PAOZZ	5310-00-637-9541	MS35338-46	96906	WASHER, LOCK: CONTROL VALVE ROD TO LINK ASSY	EA	1
E-8	28	PAOZZ	2590-00-937-1960	10887481	19207	LINK ASSEMBLY: CONTROL ROD	EA	1
E-8	29	PAOZZ	530600-891-7876	10887471	19207	BOLT, SHOULDER: LINK ASSY TO GUARD .	EA	1
E-8	30	PAOZZ	2590-00-806-1180	10884206	19207	GASKET: GUARD COVER	EA	1
E-8	31	PBOZZ	2590-00-936-5291	10884198	19207	COVER: CONTROL VALVE GUARD	EA	1
E-8	32	PAOZZ	5305-00-269-4511	MS90728-63	96906	SCREW, CAP, HEXAGON HEAD: GUARD TO MANIFOLD	EA	6
E-8	33	PBOZZ	2590-00-400-7076	10884243	19207	GUARD, BULLDOZER, CONTROL.....	EA	1



TA170104

Figure E-9. Control handle and linkage.

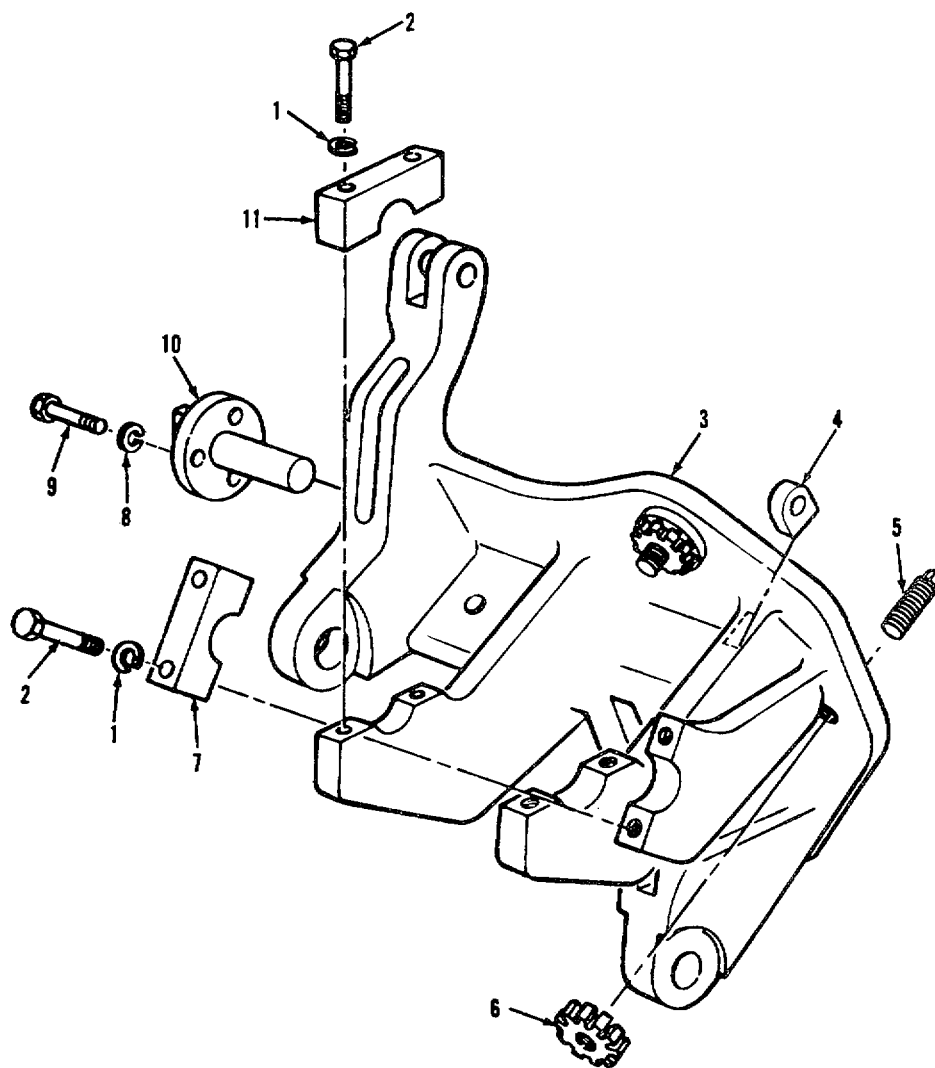
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-9	1	PBOZZ	2590-00-115-4343	10887468	19207	GROUP: 20061 BULLDOZER CONTROL LEVER AND LINKAGE LEVER, MANUAL CONTROL: CONTROL LINKAGE	EA	1
E-9 3	2	PAOZZ	5306-00-226-4827	MS90728-34	96906	SCREW, CAP, HEXAGON HEAD: INDICATOR AND BRACKET TO SHIFTING GUIDE	EA	EA
E-9	3	PAOZZ	5310-00-407-9566	MS35338-45	96906	WASHER, LOCK	EA	4
E-9	4	PAOZZ	2590-00-417-2753	10887487	19207	1NDICATOR, CONTROL: LEVER POSITION.	EA	1
E-9	5	PAOZZ	2590-00-115-4340	10887445	19207	BRACKET ASSEMBLY: LEVER.....	EA	1
E-9	6	PAOZZ	5310-00-880-7744	MS51967-5	96906	NUT, PLAIN, HEXAGON: INDICATOR AND... BRACKET TO SHIFTING GUIDE (M60 VEHICLES)	EA	3
E-9	7	PAOZZ	5310-00-785-1762	MS51968-9	96906	NUT, PLAIN, HEXAGON: TO ATTACH ARMS TO SHAFT	EA	2
E-9	8	PAOZZ	5310-00-637-9541	MS35338-46	96906	WASHER, LOCK	EA	3
E-9	9	PAOZZ	5310-00-080-6004	MS27183-14	96906	WASHER, FLAT: TO ATTACH ARMS TO..... SHAFT	EA	2
E-9	10	PAOZZ	2590-00-837-8847	10887740	19207	ROD ASSEMBLY: CONTROL LINKAGE.....	EA	1
E-9	11	PBOZZ	2590-00-837-8849	10884185	19207	ARM, CONTROL HANDLE.....	EA	2
E-9	12	PAOZZ	5315-00-616-5514	MS35756-6	90906	KEY, WOODRUFF: TO ATTACH ARMS..... TO SHAFTS	EA	4
E-9	13	PAOZZ	2590-00-837-8855	10887444	19207	SHAFT, SHOULDERED: CONTROL..... LINKAGE	EA	1
E-9	14	PAOZZ	5310-00-975-2075	MS35691-21	96906	NUT, PLAIN, HEXAGON: CONTROL..... LINKAGE	EA	4
E-9	15	PBOZZ	2590'00-221-4833	10887436	19207	SHAFT, SHOULDERED: CONTROL..... LINKAGE	EA	1
E-9	16	PBOZZ	2590-00-851-4865	10887388	19207	HOUSING ASSEMBLY: CONTROL	EA	1
E-9	17	PAOZZ	2590-00-760-5834	10887490	19207	LEVER, REMOTE CONTROL	EA	1
E-9	18	PAOZZ	5310-00-809-5998	MS'77183-18	96906	WASHER, FLAT: CONTROL LEVER	EA	1
E-9	19	PAOZZ	5310-00-016-6105	MS51968-14	96906	NUT, PLAIN, HEXAGON: CONTROL LEVER. TO SHAFT	EA	1
E-9	20	PAOZZ	3040-00-441-8799	10887739	19207	ROD ASSEMBLY: CONNECTING LINK.....	EA	1
E-9	21	PAOZZ	5305-00-068-0510	MS90728-60	96906	SCREW, CAP, HEXAGON HEAD: TO	EA	1
E-9	22	PAOZZ	5310-00-809-4061	MS27183-15	96906	ATTACH CONTROL LEVER TO INDICATOR WASHER, FLAT: TO ATTACH CONTROL LEVER TO INDICATOR	EA	1
E-9	23	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER, LOCK: LEVER TO SHAFT	EA	1
E-9	24	PAOZZ	5305-00-051-4078	MS90727-36	96906	SCREW, CAP, HEXAGON HEAD: BRACKET ASSY TO SHIFTING GUIDE (M60 VEHICLES)	EA	1
E-9	24	PAOZZ	5306-00-226-4827	MS90728-34	96906	SCREW, CAP, HEXAGON HEAD: BRACKET ASSY TO SHIFTING GUIDE (M60E1 VEHICLES)	EA	1



TA170105

Figure E-10. Control valve manifold.

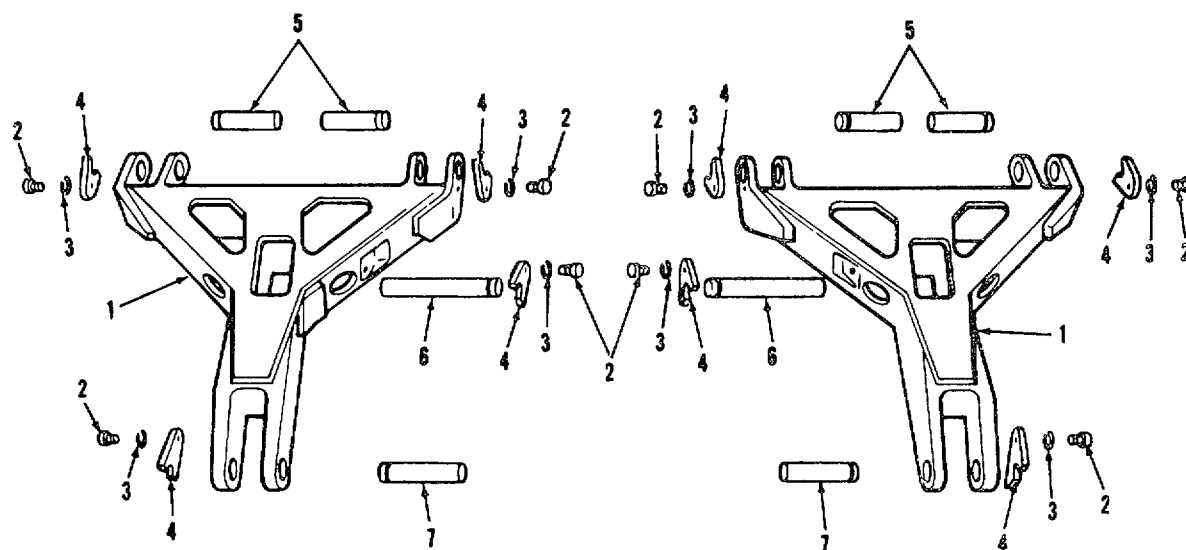
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 20062 CONTROL VALVE MANIFOLD		
E-10	1	AOOOF	2590-00-932-5009	10883747	19207	MANIFOLD ASSEMBLY: CONTROL VALVE..	EA	1
E-10	2	PBOZZ		10883674	19207	COVER ASSEMBLY: CONTROL VALVE.....	EA	1
E-10	3	PAOZZ	2590-00-806-1157	10883716	19207	MANIFOLD GASKET: CONTROL VALVE MANIFOLD.....	EA	1
E-10	4	PAFZZ	2590-00-806-1128	8675756	19207	COVER VALVE ASSEMBLY: PRESSURE, CONTROL	EA	1
E-10	5	PAOZZ	4710-00-806-1171	10883719	19207	TUBE ASSEMBLY: CONTROL VALVE TO....	EA	1
E-10	6	AOOOO		7356794	19207	UNLOADER ASSY UNLOADER ASSEMBLY, SAFETY:.....	EA	1
E-10	7	PAOZZ	5310-00-837-7788	8383242	19207	CONTROL VALVE MANIFOLD GASKET: UNLOADER ASSY.....	EA	1
E-10	8	PAOZZ	5310-00-231-7665	11645094	19207	NUT, PLAIN, HEXAGON: UNLOADER	EA	1
E-10	9	PAOZZ	4730-00-542-4569	423293	00000	ASSY ELBOW: UNLOADER ASSY	EA	1
E-10	10	PAOZZ	2590-00-735-6793	7356793	19207	UNLOADER: UNLOADER ASSY	EA	1
E-10	11	PBFZZ		10883910	19207	MANIFOLD: CONTROL VALVE	EA	1
E-10	12	PAOZZ	4730-00-409-8933	7044034	19207	ELBOW, PIPE: SAFETY UNLOADER ASSY ..	EA	1
E-10	13	PAOZZ	5841-00-608-9087	190774	37695	ELBOW, PIPE: CONTROL VALVE ASSY	EA	1
E-10	14	PAOZZ	5330-00-579-7927	MS28775-225	96906	PACKING, PREFORMED: CONTROL	EA	1
E-10	15	PAOZZ	5330-00-297-9990	MS28775-222	96906	VALVE MANIFOLD ASSY PACKING, PREFORMED: CONTROL	EA	3
E-10	16	PAOZZ	5310-00-584-5272	MS35338-48	96906	VALVE MANIFOLD ASSY WASHER, LOCK: CONTROL VALVE	EA	4
E-10	17	PAOZZ	5305-00-716-8156	MS90726-128	96906	TO MANIFOLD SCREW, CAP, HEXAGON HEAD:	EA	4
E-10	18	PAOZZ	5310-00-637-9541	MS35338-46	96906	CONTROL VALVE TO MANIFOLD WASHER, LOCK: COVER TO MANIFOLD	EA	12
E-10	19	PAOZZ	5305-00-269-3212	MSgJ725-61	96906	SCREW, CAP, HEXAGON HEAD: COVER	EA	12
E-10	20	PAOZZ	5315-00-839-5822	MS24665-353	96906	TO MANIFOLD PIN, COTTER: MANIFOLD TO HULL	EA	2
E-10	21	PAOZZ	5315-00-150-3674	10883885	19207	PIN, STRAIGHT, HEADED: MANIFOLD	EA	2
E-10	22	PBOZZ	2590-00-410-5767	10883915	19207	TO HULL LUG: MANIFOLD TO HULL.....	EA	2
E-10	23	PAOZZ	5310-00-823-8803	MS27183-21	96906	WASHER, FLAT: MANIFOLD TO HULL	EA	4
E-10	24	PBOZZ	5310-01-037-5360	7699877	19207	PAD: MANIFOLD TO HULL.....	EA	2
E-10	25	PAOZZ	5310-00-820-6653	MS35338-50	96906	WASHER, LOCK: MANIFOLD TO HULL	EA	2
E-10	26	PAOZZ	5305-00-724-7223	MS90728-165	96906	SCREW,CAP,HEXAGON HEAD: MANIFOLD. TO HULL	EA	2



TA170106

Figure E-11. Moldboard mounting brackets and related parts.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-11	1	PAOZZ	5310-00-584-7889	MS35338-53	96906	GROUP: 20063 MOLDBOARD MOUNTING BRACKETS AND RELATED PARTS WASHER, LOCK: CYLINDER ASSY	EA	12
E-11	2	PAOZZ	5305-00-022-3868	223868	21450	RETAINER CAPS .SCREW, CAP, HEXAGON HEAD:	EA	12
E-11	3	PBOZZ	2590-00-407-6763	10883626	19207	CYLINDER ASSY RETAINER CAPS BRACKET, MOUNTING: MOLDBOARD,	EA	1
E-11	3	PBOZZ	2590-01-065-7200	10883627	19207	LEFT BRACKET, MOUNTING: MOLDBOARD,	EA	1
E-11	4	PAOZZ	3040-01-037-5414	8744719	19207	RIG HT LUG: CYLINDER REAR GUARD, L AND R	EA	8
E-11	5	PAOZZ	5305-01-078-5975	10911673	19207	SETSCREW: MOLDBOARD BRACKETS..... TO HULL	EA	6
E-11	6	PAOZZ	5310-00-728-2038	8715761	19207	NUT: MOLDBOARD BRACKETS TO HULL....	EA	6
E-11	7	PAOZZ		8709448	19207	CAP: MOLDBOARD TILT ARM, OUTER,..... TO BRACKET	EA	2
E-11	8	PAOZZ	5310-00-637-9541	MS35338-46	96906	WASHER, LOCK: PIN RETAINER TO	EA	6
E-11	9	PAOZZ	5305-00-269-3214	MS90725-64	96906	BRACKETS SCREW, CAP, HEXAGON HEAD: PIN	EA	6
E-11	10	PAOZZ	2590-00-806-1175	10883772	19207	RETAINERS TO BRACKETS PIN: MOLDBOARD BRACKETS TO	EA	2
E-11	11	PAOZZ		8709446	19207	VEHICLE MOUNTING LUGS CAP: MOLDBOARD CYLINDER AND RAM.... RETAINING	EA	4



TA170107

Figure E-12. Pushbeams and related parts.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 20064 PUSHBEAMS AND RELATED PARTS		
E-12	1	PBOZZ	2590-00-280-2152	11659027	19207	PUSHBEAM ASSEMBLY: MOLDBOARD	EA	2
E-12	2	PAOZZ	5305-00-726-2543	MS90727-160	96906	SCREW, CAP, HEXAGON HEAD: PUSHBEAM	EA	EA
E-12	3	PAOZZ	5310-00-800-0695	MS35335-39	96906	WASHER, LOCK: PUSHBEAM	EA	8
E-12	4	PAOZZ	2590-00-889-6730	11637238	19207	LOCK: PUSHBEAM PIN	EA	8
E-12	5	PAOZZ	5315-00-006-9639	11637640-1	19207	PIN, STRAIGHT, GROOVED: PUSHBEAM TO MOLDBOARD	EA	4
E-12	6	PAOZZ	5315-00-008-3176	11637640-4	19207	PIN, STRAIGHT, GROOVED: PUSHBEAM PIVOT LINK	EA	2
E-12	7	PAOZZ	5315-00-006-9640	11637640-2	19207	PIN, STRAIGHT, GROOVED: PUSHBEAM TO BRACKET	EA	2

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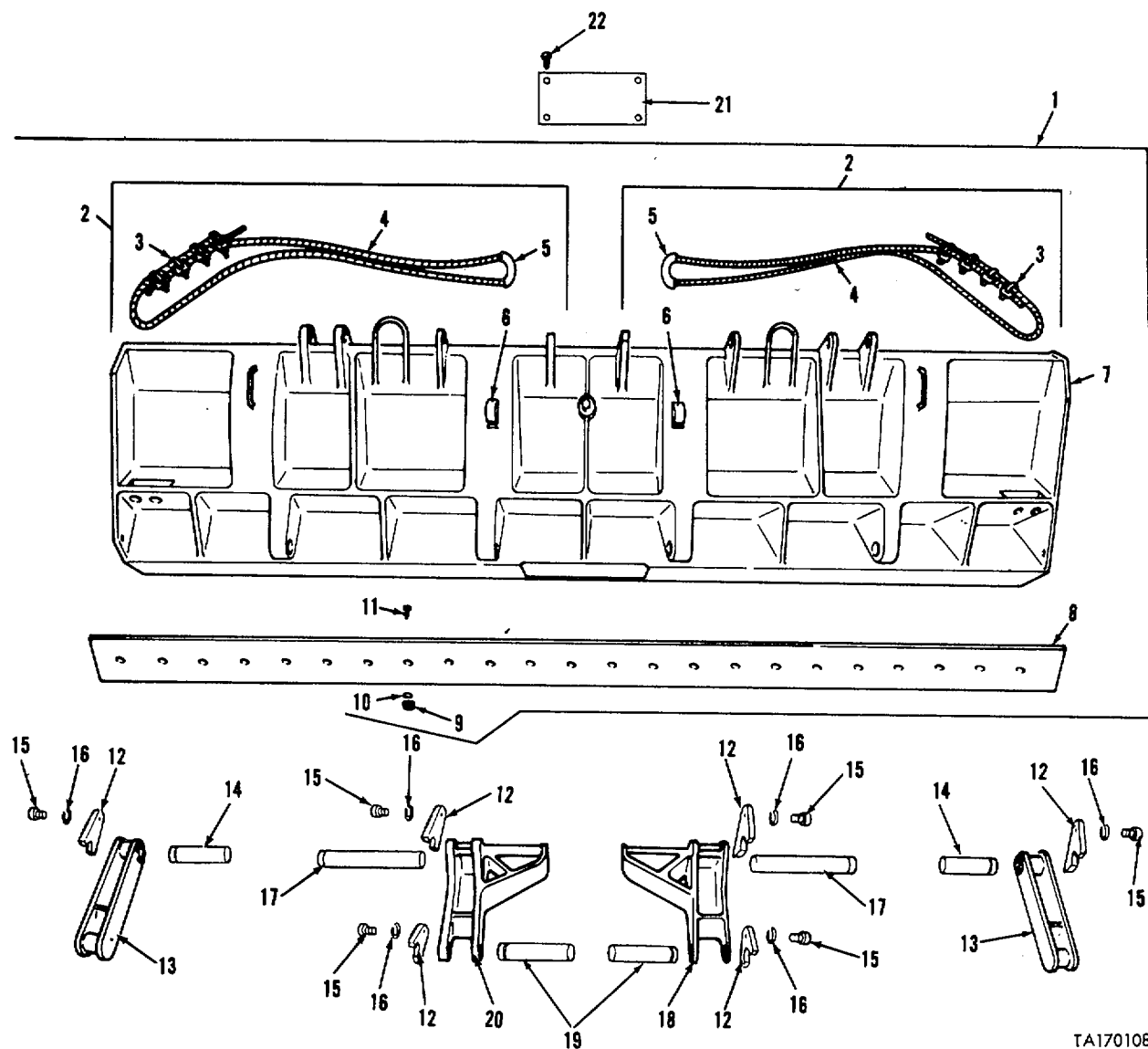
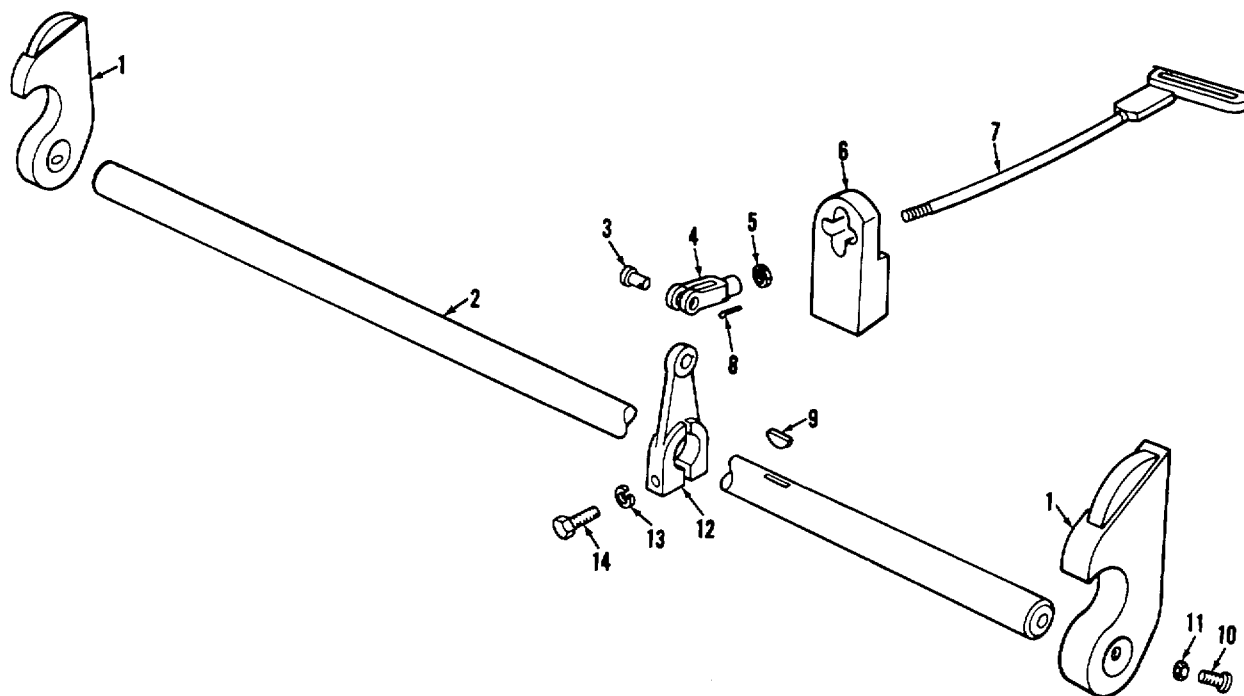


Figure E-13. Moldboard, tilt arms, and related parts.

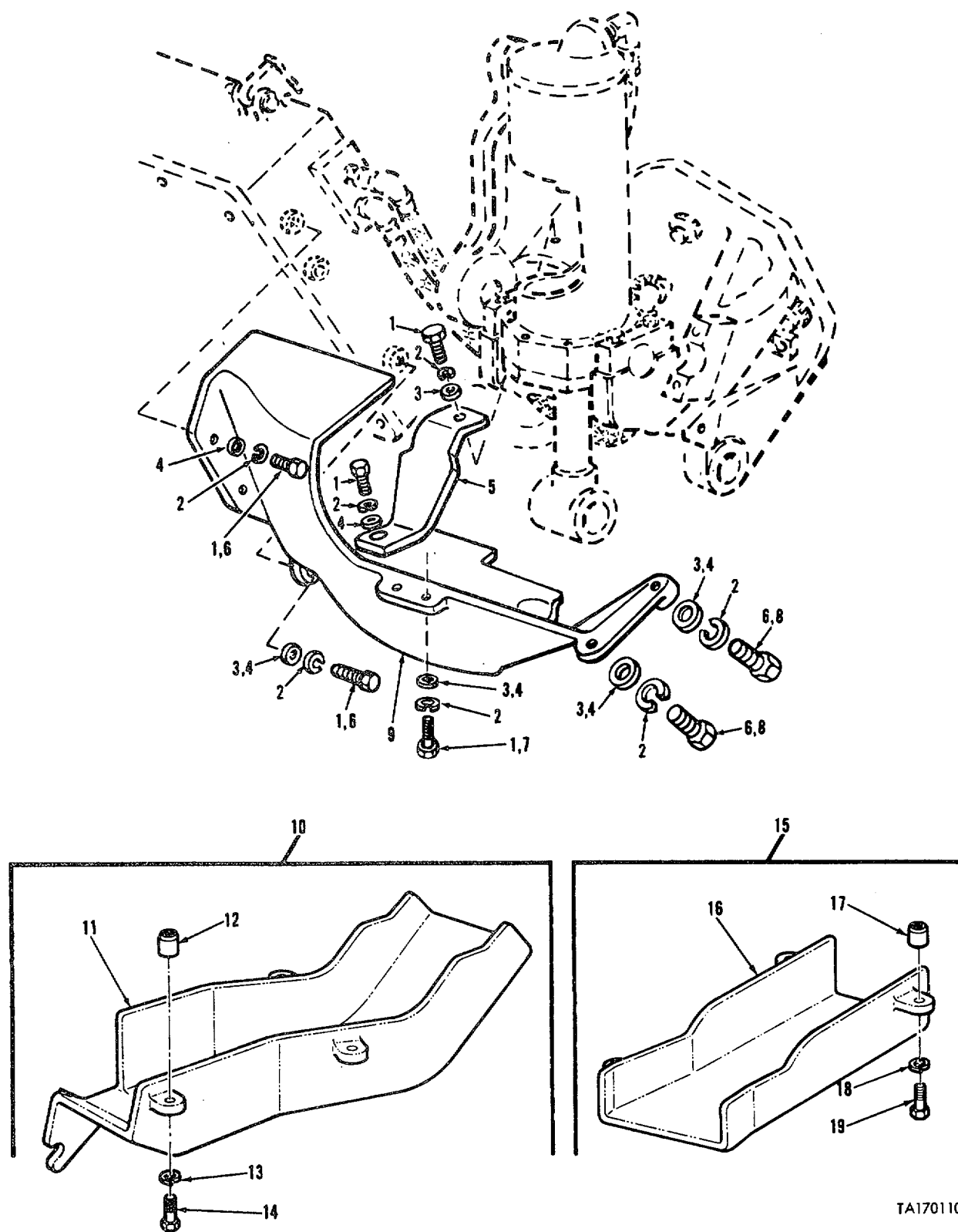
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 20065 MOLDBOARD, TILT ARMS, AND RELATED PARTS		
E-13	1	PBOOO	2590-00-295-9990	11659092	19207	BLADE ASSEMBLY: BULLDOZER.....	EA	1
E-13	2	PAOOO	3830-00-520-8385	7360940	19207	CABLE ASSEMBLY: MOLDBOARD..... MECHANICAL LIFTING	EA	2
E-13	3	PAOZZ	4030-00-243-4441	MS16842-8	96906	CLAMP, WIRE: MOLDBOARD..... MECHANICAL LIFTING CABLE	EA	4
E-13	4	XAOZZ	8383372	19207		CABLE: MOLDBOARD MECHANICAL..... LIFTING CABLE	EA	1
E-13	5	XAOZZ	4710-00-240-9255	8383374	19207	TUBE, CABLE END: MOLDBOARD..... MECHANICAL LIFTING CABLE	EA	1
E-13	6	PAOOO	2590-00-125-3836	10934326	19207	CLAMP ASSEMBLY: MOLDBOARD..... MECHANICAL LIFTING CABLE STOWAGE	EA	2
E-13	7	XAOOO		11659074	19207	MOLDBOARD ASSEMBLY, BLADE.....	EA	1
E-13	8	PAOZZ	2540-00-770-5174	7705174	19207	EDGE: CUTTING, MOLDBOARD BLADE.....	EA	1
E-13	9	PAOZZ	5310-00-763-8921	MS51967-23	96906	NUT, PLAIN, HEXAGON: CUTTING EDGE TO MOLDBOARD	EA	24
E-13	10	PAOZZ	5310-00-584-7888	MS35338-51	96906	WASHER, LOCK: CUTTING EDGE TO MOLDBOARD	EA	24
E-13	11	PAOZZ	5306-00-004-0764	11640676	19207	BOLT: CUTTING EDGE TO MOLDBOARD	EA	24
E-13	12	PAOZZ	2590-00-889-6730	11637238	19207	LOCK: INBOARD AND OUTBOARD TILT..... ARMS TO MOLDBOARD PINS	EA	6
E-13	13	PAOZZ	2590-00-279-8174	11659028	19207	TILT ARM ASSEMBLY: OUTER L AND R.....	EA	2
E-13	14	PAOZZ	5315-00-008-3177	11637640-5	19207	PIN, STRAIGHT, GROOVED: OUTER..... TILT ARMS TO MOLDBOARD	EA	2
E-13	15	PAOZZ	5305-00-726-2543	MS90727-160	96906	SCREW,CAP,HEXAGON HEAD: LOCK PINS	EA	6
E-13	16	PAOZZ	5310-00-800-0695	MS35335-39	96906	WASHER, LOCK: LOCK PINS	EA	6
E-13	17	PAOZZ	3040-00-231-7469	11637640-6	19207	PIN, STRAIGHT, GROOVED: L AND R INNER TILT ARMS TO MOLDBOARD	EA	2
E-13	18	PAOZZ	2590-00-280-2150	11659061-2	19207	TILT ARM ASSEMBLY: INNER R	EA	1
E-13	19	PAOZZ	5315-00-008-3175	11637640-3	19207	PIN, STRAIGHT, GROOVED, L AND R INNER TILT ARMS TO BRACKET	EA	2
E-13	20	PAOZZ	2590-00-295-7784	11659061-1	19207	TILT ARM ASSEMBLY: INNER L.....	EA	1
E-13	21	PAOZZ	2590-00-827-8484	10884301	19207	PLATE, IDENTIFICATION: BULLDOZER (SEE GROUP 2210)	EA	1
E-13	22	PAOZZ	5305-00-855-0957	MS24649-46	96906	SCREW, TAPPING, THREAD CUTTING: IDENTIFICATION PLATE (SEE GROUP 2210)	EA	4



TA170109

Figure E-14. Moldboard carrying hooks, control handle, and related parts.

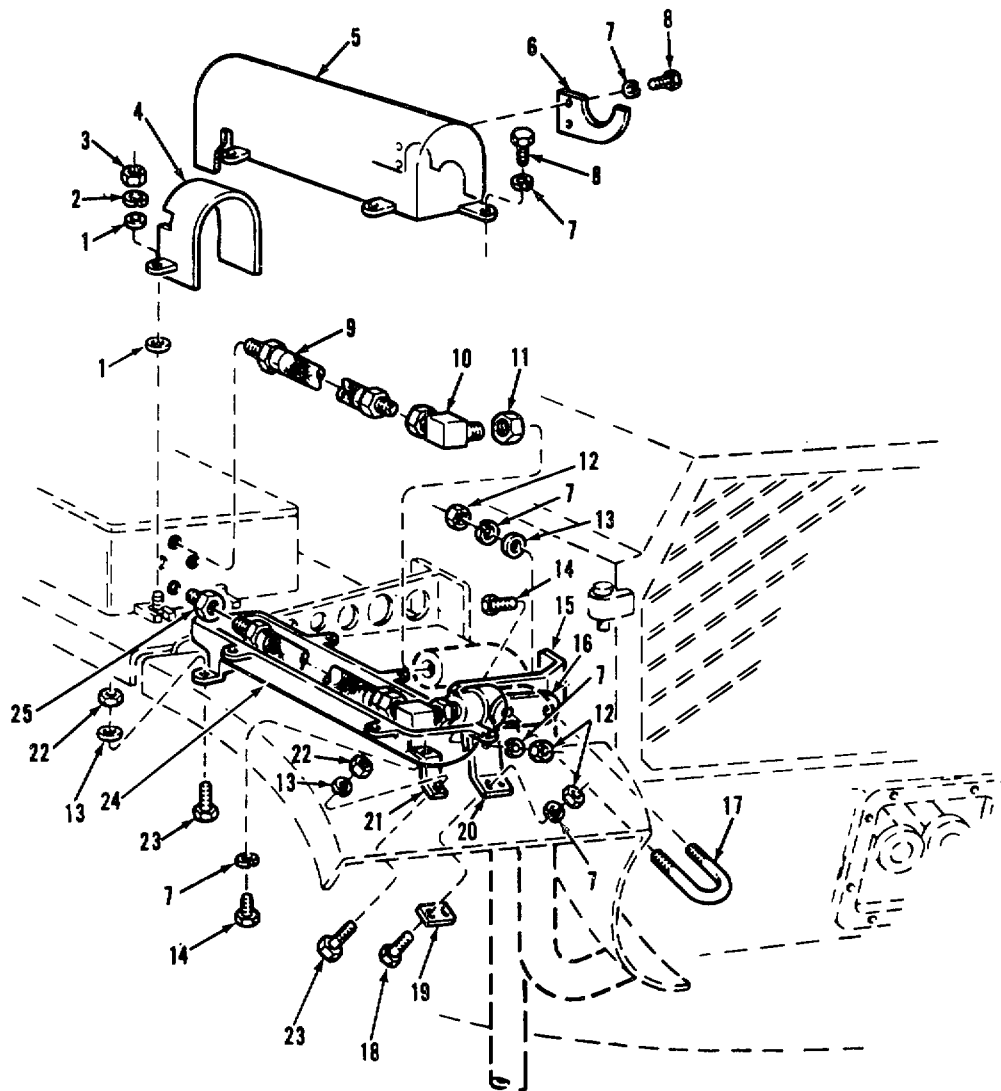
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 20066 MOLDBOARD CARRYING HOOKS,CONTROL HANDLE,AND RELATED PARTS		
E-14	1	PAOZZ	2590-00-898-6091	8709802	19207	HOOK: MOLDBOARD TRAVEL LOCK	EA	2
E-14	2	PAOZZ	2540-00-911-3598	11590939	19207	SHAFTs MOLDBOARD TRAVEL LOCK	EA	1
E-14	3	PAOZZ	5315-00-140-1938	MS35810-6	96906	PIN,STRAIGHT,HEADED: CLEVIS TO ARM.	EA	1
E-14	4	PAOZZ	5340-00-550-8070	MS35812-11	96906	CLEVIS,ROD END: CONTROL HANDLE	EA	1
E-14	S	PAOZZ	5310-00-834-8734	MS35691-37	96906	NUT,JAM: ROD END CLEVIS.....	EA	1
E-14	6	XBOZZ		10883667	19207	SUPPORT: CONTROL HANDLE	EA	1
E-14	7	PAOZZ	2590-00-125-3845	10883696	19207	HANDLE ASSEMBLY: MOLDBOARD.....	EA	1
						TRAVEL LOCK		
E-14	8	PAOZZ	5315-00-839-5822	MS24665-353	96906	PIN,COTTER: ROD END CLEVIS PIN.....	EA	1
E-14	9	PAOZZ	5315-00-616-5520	MS35756-14	96906	KEY,WOODRUFF: MOLDBOARD TRAVEL ..	EA	1
						LOCK SHAFT		
E-14	10	PAOZZ	5305-00-054-9288	MS51955-74	96906	SETSCREW: TRAVEL LOCK HOOK TO	EA	2
						SHAFT		
E-14	11	PAOZZ	5310-00-834-8732	MS35691-33	96906	NUT,JAM: TRAVEL LOCK HOOK TO	EA	2
						SHAFT		
E-14	12	PAOZZ	2590-00-740-3981	8709801	19207	ARM: TRAVEL LOCK HANDLE TO SHAFT ...	EA	1
E-14	13	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER,LOCK: CONTROL ARM TO	EA	1
						SHAFT		
E-14	14	PAOZZ	5305-00-071-2073	MS90728-117	96906	SCREW,CAP,HEXAGON HEAD: CONTROL.	EA	1
						ARM TO SHAFT		



TA170110

Figure E-15. Hose guard and valve guard to mounting bracket and manifold.

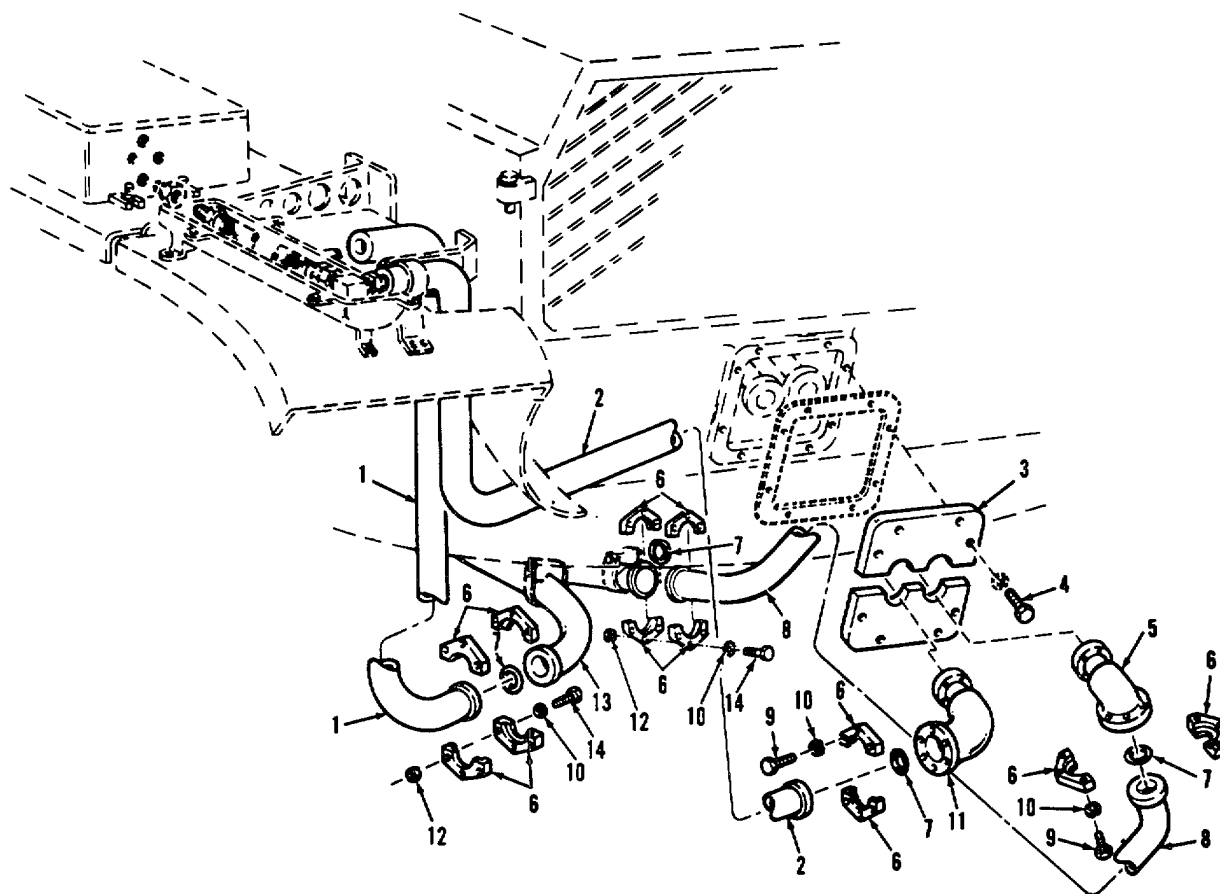
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-15	1	PAOZZ	5305-00-071-2069	MS90728-113	96906	GROUP: 20067 HOSE GUARD AND VALVE GUARD TO MOUNTING BRACKET AND MANIFOLD SCREW,CAP,HEXAGON HEAD: HOSE GUARD	EA	8
E-15	2	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER,LOCK: CYLINDER HOSE GUARD	EA	16
E-15	3	PAOZZ	5310-00-809-5998	MS27183-18	96906	WASHER,FLAT: CYLINDER HOSE GUARD. (RIGHT SIDE ONLY)	EA	8
E-15	4	PAOZZ	5310-00-809-3079	MS27183-19	96906	WASHCR,FLAT: CYLINDER HOSE GUARD. (LEFT SIDE ONLY)	EA	8
E-15	5	PBOZZ		10883821	19207	GUARD: L AND R CYLINDER HOSE	EA	2
E-15	6	PAOZZ	5305-00-071-2070	MS90728-114	96906	SCREW,CAP,HEXAGON HEAD: CYLINDER HOSE GUARD (LEFT SIDE ONLY)	EA	5
E-15	7	PAOZZ	5305-00-071-2072	MS90728-116	96906	SCREW,CAP,HEXAGON HEAD: HOSE GUARD (LEFT SIDE ONLY)	EA	1
E-15	8	PAOZZ	5305-00-071-2073	MS90728-117	96906	SCREW,CAP,HEXAGON: CYLINDER HOSE GUARD (RIGHT SIDE ONLY)	EA	2
E-15	9	PBOZZ		10884065	19207	GUARD: HYDRAULIC CYLINDER HOSE,L...	EA	1
E-15	9	PBOZZ		10884066	19207	GUARD: HYDRAULIC CYLINDER HOSE,R ..	EA	1
E-15	10	PAOOO	2590-00-104-8872	10884146	19207	GUARD ASSEMBLY: CONTROL VALVE..... MAIN TUBE,FRONT	EA	1
E-15	11	XAOZZ		10884143	19207	GUARD: CONTROL VALVE,FRONT	EA	1
E-15	12	PAOZZ	5310-01-03i-5397	10884156	19207	BLOCK TAPPING: CONTROL VALVE..... GUARD FRONT	EA	3
E-15	13	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER,LOCK: CONTROL VALVE	EA	3
E-15	14	PAOZZ	5305-00-071-2067	MS90728-111	96906	GUARD FRONT SCREW,CAP,HEXAGON HEAD:	EA	3
E-15	15	PAOOO	2590-00-410-5768	10884145	19207	CONTROL VALVE GUARD,FRONT GUARD ASSEMBLY: CONTROL VALVE,..... MAIN TUBE,REAR	EA	1
E-15	16	XAOZZ		10884126	19207	GUARD: CONTROL VALVE,REAR.....	EA	1
E-15	17	PAOZZ	5310-01-037-5397	10884156	19207	BLOCK,TAPPING: CONTROL VALVE	EA	3
E-15	18	PAOZZ	5310-00-584-5272	MS35338-48	96906	GUARD,REAR WASHER,LOCK: CONTROL VALVE	EA	3
E-15	19	PAOZZ	5315-00-071-2067	MS90728-111	96906	GUARD,REAR SCREW,CAP,HEXAGON HEAD:	EA	3
						CONTROL VALVE GUARD,REAR		



TA170111

Figure E-16. Reservoir hoses and guards.

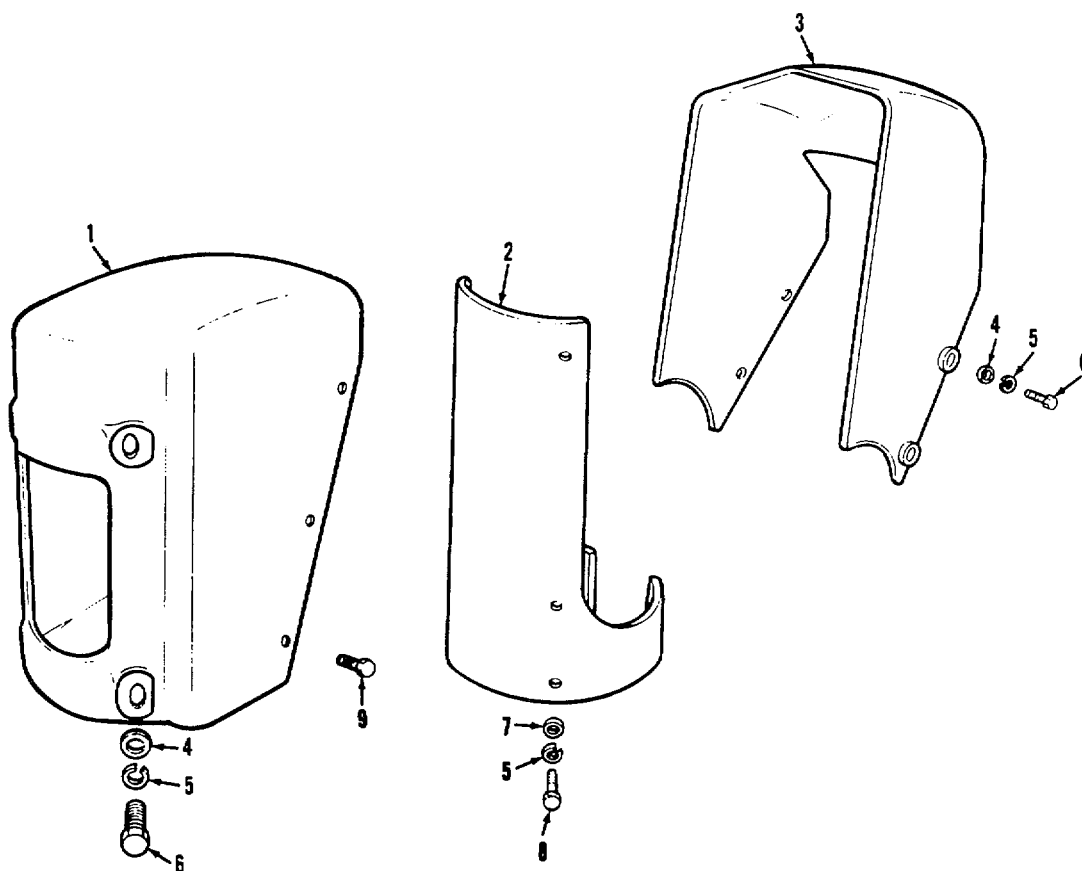
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 20068 RESERVOIR HOSES AND GUARDS		
E-16	1	PAOZZ	5310-00-809-8533	MS27183-22	96906	WASHER,FLAT: RESERVOIR AND GUARD TO FENDER	EA	4
E-16	2	PAOZZ	5310-00-584-7888	MS35338-51	96906	WASHER,LOCK: RESERVOIR AND GUARD TO FENDER	EA	2
E-16	3	PAOZZ	5310-00-763-8894	MS51968-24	96906	NUT,PLAIN,HEXAGON: RESERVOIR AND... GUARD TO FENDER	EA	2
E-16	4	PBOZZ		10883785	19207	GUARD: RESERVOIR HOSE	EA	1
E-16	5	PBOZZ		10883769	19207	GUARD: RESERVOIR HOSE,UPPER	EA	1
E-16	6	PAOZZ	2590-00-403-9453	10883768	19207	SUPPORT: TUBE,RESERVOIR HOSE..... GUARD COVER	EA	1
E-16	7	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER,LOCK: HOSE GUARDS.....	EA	13
E-16	8	PAOZZ	5305-00-732-0511	MS90728-110	96906	SCREW,CAP,HEXAGON HEAD: HOSE GUARDS	EA	7
E-16	9	PAOZZ	4720-00-806-1133	8675765	19207	HOSE ASSEMBLY: RESERVOIR	EA	2
E-16	10	PAOZZ	4730-00-809-1452	7339950	19207	ELBOW,PIPE: RESERVOIR HOSE TO TUBE	EA	EA
E-16	11	PAOZZ	2590-00-806-1130	7335558	19207	SEAL ASSEMBLY: HOSE TO TUBE.....	EA	2
E-16	12	PAOZZ	5310-00-768-0018	MS51967-14	96906	NUT,PLAIN,HEXAGON: RESERVOIR GUARDS AND SUPPORTS	EA	5
E-16	13	PAOZZ	5310-00-809-3079	MS27183-19	96906	WASHER,FLAT: U-BOLT TO BRACKET	EA	5
E-16	14	PAOZZ	5305-00-071-2067	MS90728-111	96906	SCREW,CAP,HEXAGON HEAD	EA	2
E-16	15	PBOZZ	5340-01-037-6825	10884205	19207	BRACKET: SUPPORT,RESERVOIR TUBE ... SUPPORT	EA	1
E-16	16	PAOZZ	5365-01-037-5424	10884203	19207	SPACER: RESERVOIR TUBES.....	EA	1
E-16	17	PAOZZ	5306-01-078-9418	10884201	19207	U-BOLT: RESERVOIR TUBE SUPPORT..... BRACKET	EA	1
E-16	18	PAOZZ	5305-00-071-2069	MS90728-113	96906	SCREW,CAP,HEXAGON HEAD: MANIFOLD HANGER SUPPORT PLATE TO FENDER	EA	2
E-16	19	XDOZZ		10884494	19207	PLATE,SUPPORT: RESERVOIR MANIFOLD HANGER	EA	1
E-16	20	PBOZZ		10884493	19207	HANGER,SUPPORT: RESERVOIR MANIFOLD.... TUBE	EA	1
E-16	21	PBOZZ		10883774	19207	BRACKET: HOSE GUARD SUPPORT	EA	1
E-16	22	PAOZZ	5310-00-225-6993	MS51922-33	96906	NUT,SELF-LOCKING: HOSE GUARD AND .. BRACKET TO FENDER	EA	3
E-16	23	PAOZZ	5305-00-071-2070	MS90728-114	96906	SCREW,CAP,HEXAGON HEAD: HOSE GUARD TO FENDER	EA	3
E-16	24	PBOZZ	5340-01-037-5430	10883789	19207	GUARD: RESERVOIR HOSE,LOWER	EA	1
E-16	25	PAOZZ	4730-00-900-8487	10884527	19207	ADAPTER: HOSE TO RESERVOIR.....	EA	1



TA170112

Figure E-17. Access plate, elbows, and armor tubes.

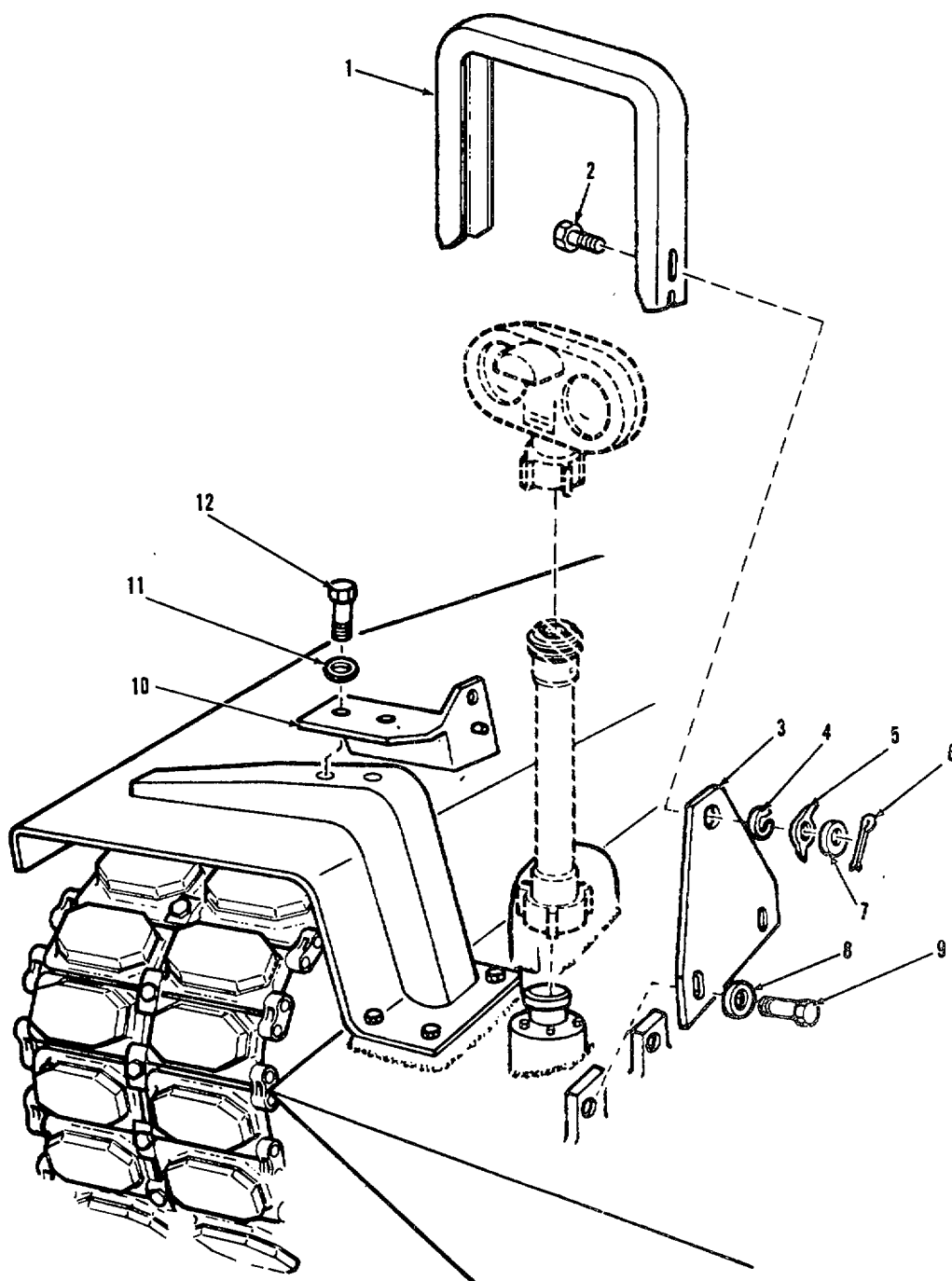
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 20069 ACCESS PLATE,ELBOWS, AND ARMOR TUBES		
E-17	1	PAOZZ	2590-00-177-8319	10883803	19207	TUBE ASSEMBLY: RESERVOIR TO CON-...	EA	1
E-17	2	PAOZZ	4710-00-435-7710	10883802	19207	TUBE ASSEMBLY: RESERVOIR TO.....	EA	1
E-17	3	PAOZZ	2590-00-115-4346	10883658	19207	MANIFOLD CLAMP,ARMOR PLATEs HYDRAULIC	EA	2
E-17	4	PAOZZ	5305-00-782-9489	MS90728-66	96906	PUMP ACCESS SCREW,CAP,HEXAGON HEAD: TO	EA	8
E-17	5	PAOZZ	2590-00-494-9517	10883659	19207	ATTACH CLAMP PLATE ELBOW: HYDRAULIC PUMP TO CONTROLRA	EA	1
E-17	6	PAOZZ	2520-00-700-5921	10883657	19207	VALVE TUBE FLANGEt RESERVOIR PRESSURE TUBES..	EA	12
E-17	7	PAOZZ	5330-00-585-8247	MS28775-232	96906	PACKING,PREFORMED: PRESSURE TUBES	EA	4
E-17	8	PAOZZ	4710-01-043-5226	10883827	19207	TUBE ASSEMBLY: MANIFOLD TO CONTROL.....	EA	1
E-17	9	PAOZZ	5305-00-071-2069	M890728-113	98906	VALVE SCREW,CAP,HEXAGON HEADt.....	EA	13
E-17	10	PAOZZ	5310-00-584-5272	MS35338-48	96906	TUBE FLANGE WASHER,LOCK: TUBE FLANGE	EA	12
E-17	11	PAOZZ	2590-00-494-9518	10883660	19207	ELBOW: RESERVOIR TO HYDRAULIC PUMP.....	EA	1
E-17	12	PAOZZ	5310-00-768-0318	MS51967-14	96906	NUT,PLAIN,HEXAGON: TUBE FLANGE	EA	12
E-17	13	PAOZZ	2590-01-068-4046	10883823	19207	TUBE ASSEMBLY: CONTROL VALVE TO....	EA	1
E-17	14	PAOZZ	5305-00-071-2072	MS90728-116	96906	RESERVOIR SCREW,CAP,HEXAGON HEAD: TUBE	EA	12
						FLANGE		



TA170113

Figure E-18. Cylinder guards.

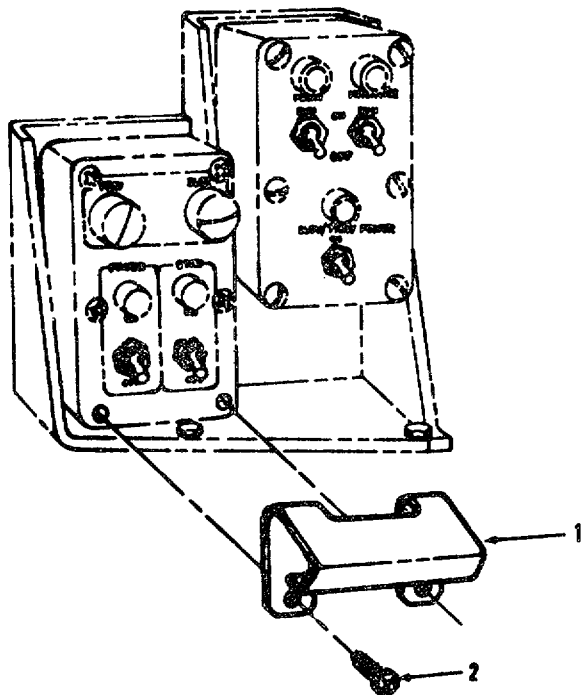
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 200610 CYLINDER GUARDS		
E-18	1	PBOZZ	2590-00-418-0777	7383742	19207	GUARD: CYLINDER, TOP, L	EA	1
E-18	1	PBOZZ	2590-00-418-0779	7383743	19207	GUARD: CYLINDER, TOP, R	EA	1
E-18	2	PBOZZ	2590-00-125-3827	7383745	19207	GUARD: CYLINDER, FRONT, L AND R	EA	2
E-18	3	PBOZZ	2590-00-177-9267	10883761	19207	GUARD: CYLINDER, REAR, LEFT	EA	1
E-18	3	PBOZZ	2590-00-177-9268	10883762	19207	GUARD: CYLINDER, REAR, RIGHT	EA	1
E-18	4	PAOZZ	5310-00-809-3079	MS27183-19	96906	WASHER, FLAT: CYLINDER GUARDS	EA	16
E-18	5	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER, LOCK: CYLINDER GUARDS	EA	24
E-18	6	PAOZZ	5305-00-071-2069	MS90728-113	96906	SCREW, CAP, HEXAGON HEAD: CYLINDER GUARDS	EA	16
E-18	7	PAOZZ	5310-00-809-5998	MS27183-18	96906	WASHER, FLAT: CYLINDER GUARD	EA	8
E-18	8	PAOZZ	5305-00-071-2068	MS90728-112	96906	SCREW, CAP, HEXAGON HEAD: CYLINDER GUARD	EA	8
E-18	9	PAOZZ	5305-00-044-4153	MS90725-109	96906	SCREW, CAP, HEXAGON HEAD: ADJUSTING	EA	8



TA170114

Figure E-19. Headlamp brush guard.

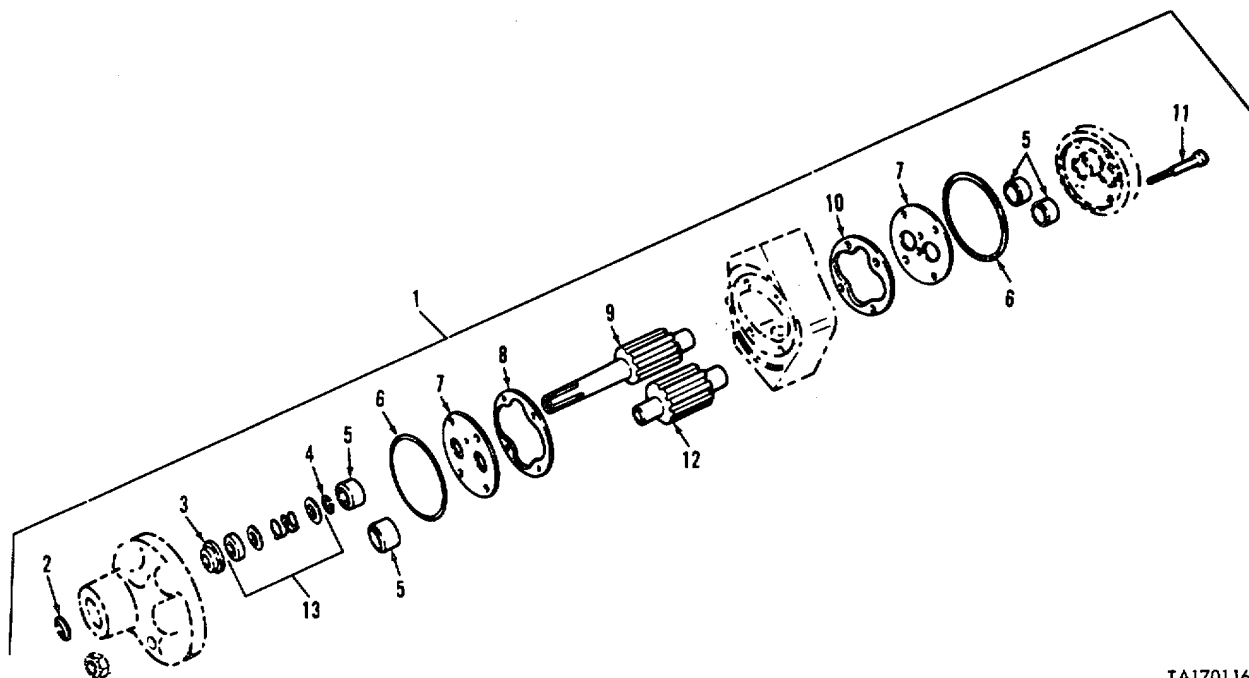
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-19	1	PAOZZ	2510-00-125-3805	10883780	19207	GROUP: 200611 HEADLAMP BRUSH GUARD GUARD: HEADLAMP BRUSH GUARD..... (OPT WITH PART NO. 11645070)	EA	1
E-19	1	PAOZZ		11645070	19207	GUARD: HEADLAMP BRUSH GUARD..... (OPT WITH PART NO. 10883780)	EA	1
E-19	2	PAOZZ	5306-00-938-1643	10887246	19207	BOLT: GUARD TO SUPPORT	EA	4
E-19	3	PAOZZ	2510-00-152-2384	10883784	19207	SUPPORT: HEADLAMP BRUSH GUARD, RIG HT	EA	1
E-19	3	PAOZZ	2510-00-689-3369	10883783	19207	SUPPORT: HEADLAMP BRUSH GUARD, LEFT	EA	1
E-19	4	PAOZZ	5310-00-637-9541	MS35338-46	96906	WASHER,LOCK: GUARD TO SUPPORT BOLT	EA	4
E-19	5	PAOZZ	5310-00-647-3934	7383581	19207	NUT,WING: GUARD TO SUPPORT BOLT	EA	4
E-19	6	PAOZZ	5315-00-816-1794	MS24665-285	96906	PIN,COTTER: GUARD TO SUPPORT BOLT.	EA	4
E-19	7	PAOZZ	5310-00-OB8-6004	MS27183-14	96906	WASHER,FLAT: GUARD TO SUPPORT BOLT	EA	4
E-19	8	PAOZZ	5310-00-809-3079	MS27183-19	96906	WASHER,FLAT: SUPPORT MOUNTING BOLT	EA	4
E-19	9	PAOZZ	5306-00-997-6189	MS35763-868	96906	BOLT,SELF-LOCKING: SUPPORT MTG.....	EA	4
E-19	10	XAOZZ	2590-00-932-3495	10940226-2	19207	SUPPORT: BRACKET,RIGHT HEADLAMP... GUARD	EA	1
E-19	10	XAOZZ	2590-00-932-3496	10940226-1	19207	SUPPORT: BRACKET,LEFT HEADLAMP GUARD	EA]
E-19	11	PAOZZ	5310-00-809-4061	MS27183-15	96906	WASHER,FLAT: SUPPORT TO FENDER BOLT,SELF-LOCKING: SUPPORT TO.....	EA	4
E-19	12	PAOZZ	5306-00-145-5076	MS35763-833	96906	FENDER	EA	4
E-19		XDOZZ		10952187	19207	BLOCK: HEADLAMP BRUSH GUARD (FOR. VEHICLE SER NOS. 3340 AND UP) (NON-ILLUSTRATED)	EA	2
E-19		PAOZZ		MS35763-837	96906	BOLT,SELF-LOCKING: BRUSH GUARD..... BLOCK (NON-ILLUSTRATED)	EA	4
E-19		PAOZZ	5310-00-809-4061	MS27183-15	96906	WASHER,FLAT: BRUSH GUARD BLOCK (NON-ILLUSTRATED)	EA	4



TA170115

Figure E-20. Gunner's stabilization guard.

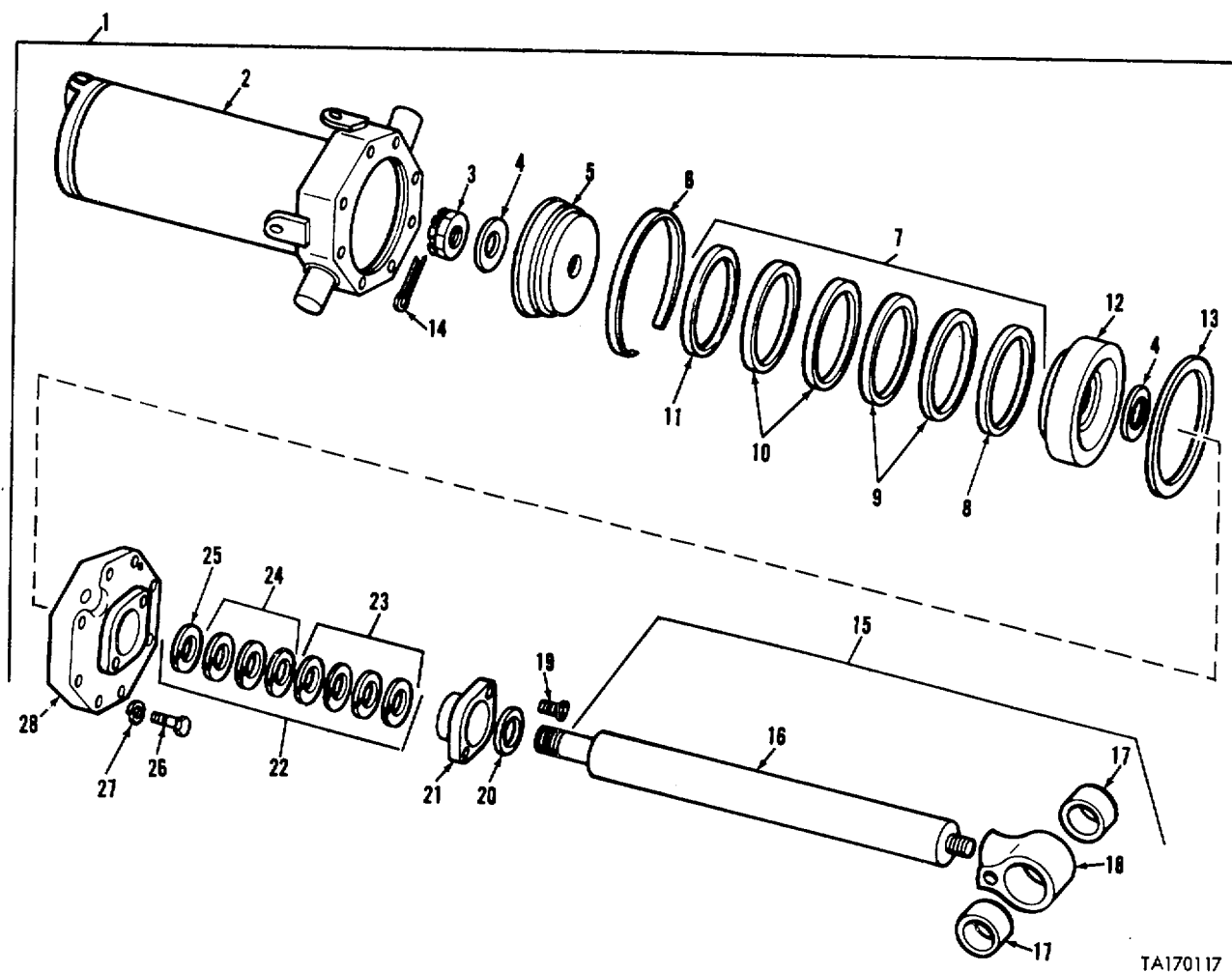
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-20	1	PAOZZ	5340-01-061-7330	12257745	19207	GROUP: 200612 GUNNER'S STABILIZATION		
E-20	2	PAOZZ	5305-00-988-1724	M35206-2S0	9S906	GUARD GUARD† GUNNER'S STABILIZATION..... SCREW,CROSS-RECESSED HEAD: GUARD..... TO CONTROL SELECTOR	EA EA	1 2



TA170116

Figure E-21. Hydraulic pump assembly.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-21	1	PAOFF	4320-00-222-8867	10951689	19207	GROUP: 2401 HYDRAULIC PUMP ASSEMBLY PUMP ASSEMBLY, HYDRAULIC: RIGHT-..... ANGLE DRIVE	EA	1
E-21	2	PAFZZ	5365-00-708-2936	8395435	19207	RING, SNAP	EA	1
E-21	3	PAFZZ	3805-00-588-1164	8395433	19207	SEAL: SEAT ASSEMBLY	EA	1
E-21	4	PAFZZ	8395443	19207	19207	RING, SNAP	EA	1
E-21	5	PAFZZ	3110-00-275-0068	8395428	19207	BEARING: PUMP ASSEMBLY	EA	4
E-21	6	PAFZZ	2590-00-707-1247	10870588	19207	PACKING, PREFORMED	EA	2
E-21	7	PAFZZ	3830-00-377-4802	8395437	19207	PLATE, WEAR	EA	2
E-21	8	PAFZZ	5365-00-588-1184	8395439	19207	GASKET, METALLIC	EA	V
E-21	9	PAFZZ	2520-00-418-4943	8395436	19207	GEAR, DRIVE	EA	1
E-21	10	PAFZZ	5330-00-862-2681	8395440	19207	GASKET	EA	V
E-21	11	PAFZZ	4730-00-329-7098	138383	66640	SCREW, CAP, SOCKET HEAD	EA	4
E-21	12	PAFZZ	2540-00-707-1242	8395438	19207	GEAR, SPUR	EA	1
E-21	13	PAFZZ	3805-00-588-1163	8395432	19207	SEAL ASSEMBLY	EA	1



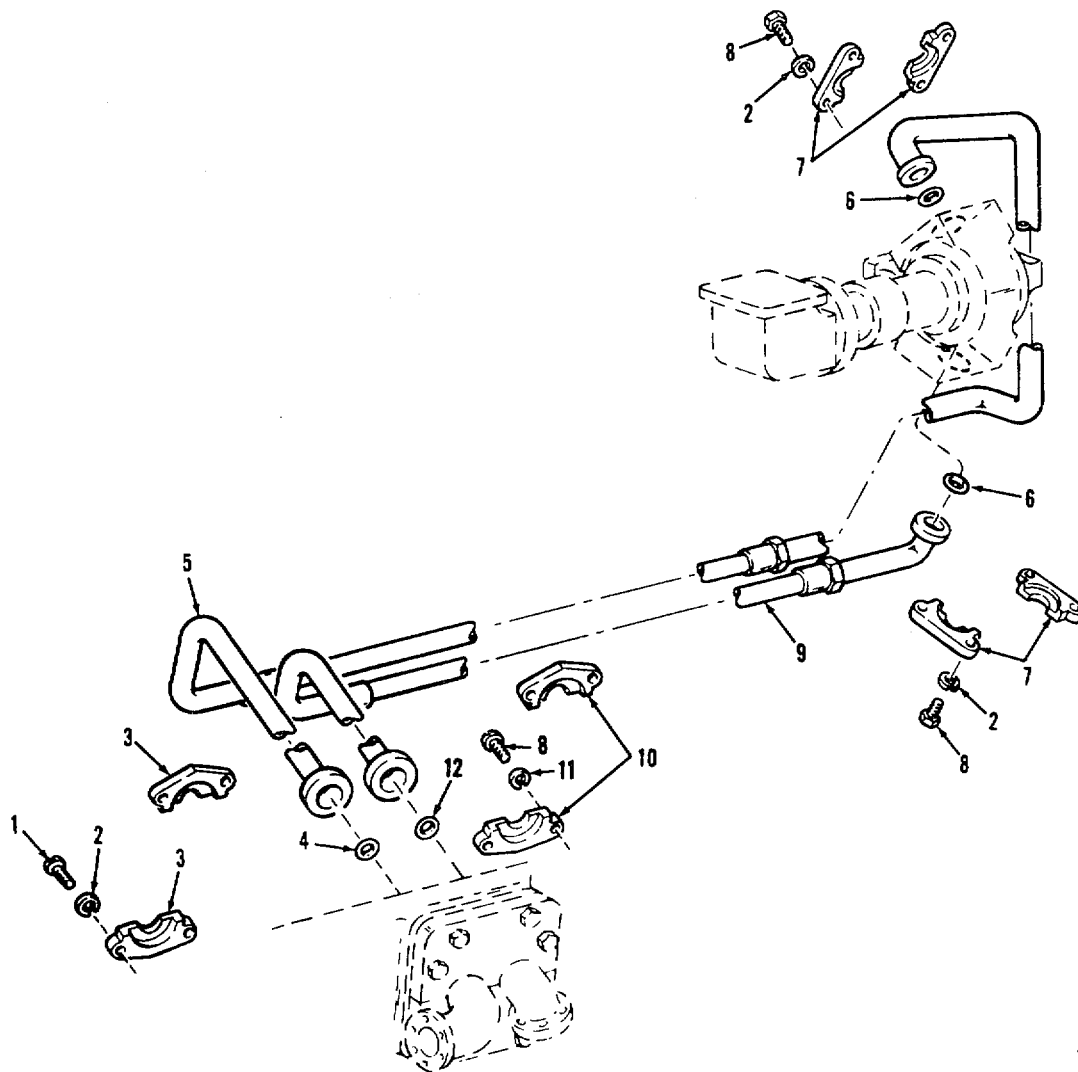
TA170117

Figure E-22. Hydraulic cylinder and ram assembly.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-22	1	PAOFF	2520-00-726-1633	7261633	19207	GROUP: 2407 HYDRAULIC CYLINDER CYLINDER ASSY: HYDRAULIC,LEFT..... (EARLY)	EA	1
E-22	1	PAOFF	2590-00-907-8969	10940524-1	19207	CYLINDER ASSEMBLY: HYDRAULIC,LEFT. (LATE MODEL)	EA	1
E-22	1	PAOFF	2590-00-907-8970	10940524-2	19207	CYLINDER ASSEMBLY,HYDRAULIC:..... RIGHT (LATE MODEL)	EA	1
E-22	1	PAOFF	2520-00-726-1634	7261634	19207	CYLINDER ASSEMBLY,HYDRAULIC:..... RIGHT (EARLY MODEL)	EA	1
E-22	2	XAFZZ		10951755-1	19207	CYLINDER,HYDRAULIC: LEFT (LATE MODEL)	EA	1
E-22	2	XAFZZ		7261636	19207	CYLINDER,HYDRAULIC: LEFT (EARLY MODEL)	EA	1
E-22	2	XAFZZ		10951755-2	19207	CYLINDER,HYDRAULIC: RIGHT..... (LATE MODEL)	EA	1
E-22	2	XAFZZ		7261637	19207	-CYLINDER,HYDRAULIC: RIGHT..... (EARLY MODEL)	EA	1
E-22	3	PAFZZ	5310-00-842-7652	MS35692-110	96906	NUT,SLOTTED,HEXAGON: PISTON TO..... RAM	EA	1
E-22	4	PAFZZ	5310-00-562-0133	8668478	19207	WASHER,FLAT: CYLINDER ASSY	EA	2
E-22	5	PAFZZ	3040-00-221-9382	7261646	19207	PISTON,CYLINDER ASSEMBLY: UPPER..... (LATE MODEL)	EA	1
E-22	8	PAFZZ	2590-00-726-1644	7261644	19207	PACKING,PREFORMED,PISTON	EA	1
E-22	7	PAFFF	5330-00-726-1470	7261470	19207	PACKING ASSEMBLY: PISTON..... (EARLY MODEL)	EA	1
E-22	8	KFFZZ		7261474-1	19207	RING: PISTON,PART OF KIT P/N 7261470 .. (LATE MODEL)	EA	1
E-22	9	KFFZZ		7261472-1	19207	RING: PISTON,PART OF KIT P/N 7261470 .. (LATE MODEL)	EA	2
E-22	10	KFFZZ		7261473	19207	RING: PISTON,PART OF KIT P/N 7261470 .. (LATE MODEL)	EA	2
E-22	11	KFFZZ		7261471-1	19207	RING: PISTON,PART OF KIT P/N 7261470 .. (LATE MODEL)	EA	1
E-22	12	PAFZZ	2520-00-726-1645	7261645	19207	PISTON,CYLINDER ASSEMBLY: LOWER....	EA	1
E-22	13	PAFZZ	5330-00-951-2492	MS28775-442	96906	RING: CYLINDER HEAD OIL SEAL..... (LATE MODEL)	EA	1
E-22	13	PAFZZ	5330-00-951-2492	MS28775-442	96906	PACKING,PREFORMED: CYLINDER..... ASSEMBLY (EARLY MODEL)	EA	1
E-22	14	PAFZZ	5315-00-846-0126	MS24665-628	96906	PIN,COTTER: CASTELLATED NUT	EA	1
E-22	15	AFFFF		8688467	19207	RAM ASSEMBLY: HYDRAULIC CYLINDER..	EA	1
E-22	16	PAFZZ	2520-00-167-9182	8668465	19207	ROD,PISTON: CYLINDER	EA	1
E-22	17	PAFZZ	3120-00-732-3548	7323548	19207	BEARING,SLEEVE: PISTON ROD END..... (EARLY MODEL)	EA	2
E-22	17	PAFZZ	3120-00-732-3548	7323548	19207	BUSHING: CYLINDER PISTON ROD..... (LATE MODEL)	EA	2

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-22	18	PAFZZ	2590-00-484-0787	8668466	19207	GROUP: 24071 HYDRAULIC CYLINDER - CONTINUED ROD END,PISTON: CYLINDER..... ASSEMBLY (EARLY MODEL)	EA	1
E-22	18	PAFZZ	2590-00-484-0787	8668466	19207	HEAD: CYLINDER PISTON ROD (LATE MODEL)	EA	1
E-22	19	PAFZZ	5305-00-939-1177	MS51096-415	96906	SCREW,CAP,HEXAGON HEAD: PISTON..... ROD PACKING GLAND (EARLY MODEL)	EA	2
E-22	19	PAFZZ	5305-00-257-6242	MS21262-68	96906	SCREW,SELF-LOCKING: PISTON ROD..... RETAINER (LATE MODEL)	EA	2
E-22	20	PAFZZ	5330-00-965-0753	7705568	19207	SEAL,PLAIN,ENCASED: OIL PISTON ROD.. GLAND	EA	1
E-22	21	PAFZZ	2590-00-726-1585	7261585	19207	GLAND: PISTON ROD (EARLY MODEL)	EA	1
E-22	21	PAFZZ	5330-00-185-9928	11659066	19207	RETAINER: PISTON ROD PACKING (LATE MODEL)	EA	1
E-22	22	PAFZZ	2520-00-770-5560	7705560	19207	PACKING ASSEMBLY PISTON ROD GLAND (EARLY MODEL)	EA	1
E-22	23	KFFZZ		7705558	19207	RING: PISTON ROD PACKING,PART OF..... KIT P/N 7705560 (LATE MODEL)	EA	4
E-22	24	KFFZZ		7705559	19207	RING: PISTON ROD PACKING,PART OF..... KIT P/N 7705560 (LATE MODEL)	EA	3
E-22	25	KFFZZ		7705557	19207	RING: PISTON ROD PACKING,PART OF..... KIT P/N 7705560 (LATE MODEL)	EA	1
E-22	26	PAFZZ	5305-00-726-2555	MS90727-168	96906	SCREW,CAP,HEXAGON HEAD: CYLINDER HEAD TO CYLINDER	EA	8
E-22	27	PAFZZ	MS35338-31	96906	WASHER,LOCK:	CYLINDER HEAD TO..... CYLINDER (LATE MODEL)	EA	8
E-22	28	PAFZZ	2520-00-726-1641	7261641	19207	HEAD: HYDRAULIC CYLINDER..... (LATE MODEL)	EA	1
E-22	7	PAFFF	5330-00-726-1470	7261470	19207	PARTS KIT: PACKING SET,PISTON..... (LATE MODEL)	EA	1
E-22	8		---			RING.....	EA	1
E-22	9		---			RING.....	EA	2
E-22	10		---			RING.....	EA	2
E-22	11		---			RING.....	EA	1
E-22	22	PAFFF	2520-00-770-5560	7705560	19207	PARTS KIT: PACKING SET,PISTON ROD.... (LATE MODEL)	EA	1
E-22	23		---			RING.....	EA	4
E-22	24		---			RING.....	EA	3
E-22	25		---			RING.....	EA	1

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TA170118

Figure E-23. Hose assemblies to elbows.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 24072 HOSE ASSEMBLIES TO ELBOWS		
E-23	1	PAOZZ	5305-00-071-2069	MS90728-113	96906	SCREW,CAP,HEXAGON HEAD: HOSE FLANGE TO ELBOW	EA	4
E-23	2	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER,LOCK: HOSE FLANGE	EA	12
E-23	3	PAOZZ	2590-00-410-5769	7340001	19207	FLANGE: HOSE TO ELBOW	EA	2
E-23	4	PAOZZ	5330-00-297-9990	MS28775-222	96906	PACKING,PREFORMED: HOSE TO ELBOW	EA	1
E-23	5	PAOZZ	2590-00-806-1131	8675761	19207	HOSE ASSEMBLY: HYDRAULIC,ELBOW..... TO PUMP	EA	1
E-23	6	PAOZZ	5330-00-807-8993	MS28775-228	96906	PACKING,PREFORMED: HOSE ASSEMBLIES TO PUMP	EA	2
E-23	7	PAOZZ	2590-00-552-3955	7340002	19207	FLANGE: HOSE ASSEMBLIES TO PUMP	EA	4
E-23	8	PAOZZ	5305-00-071-2067	MS90728-111	96906	SCREW,CAP,HEXAGON HEAD: HOSE FLANGE	EA	12
E-23	9	PAOZZ	2590-00-806-1132	8675762	19207	HOSE ASSEMBLY: HYDRAULIC,ELBOW TO PUMP	EA	1
E-23	10	PAOZZ	2590-00-552-3933	7340000	19207	FLANGE: HOSE TO ELBOW	EA	2
E-23	11	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER,LOCK: HOSE FLANGE	EA	4
E-23	12	PAOZZ	5330-00-579-7927	MS28775-225	96906	PACKING,PREFORMED: HOSE TO ELBOW	EA	1

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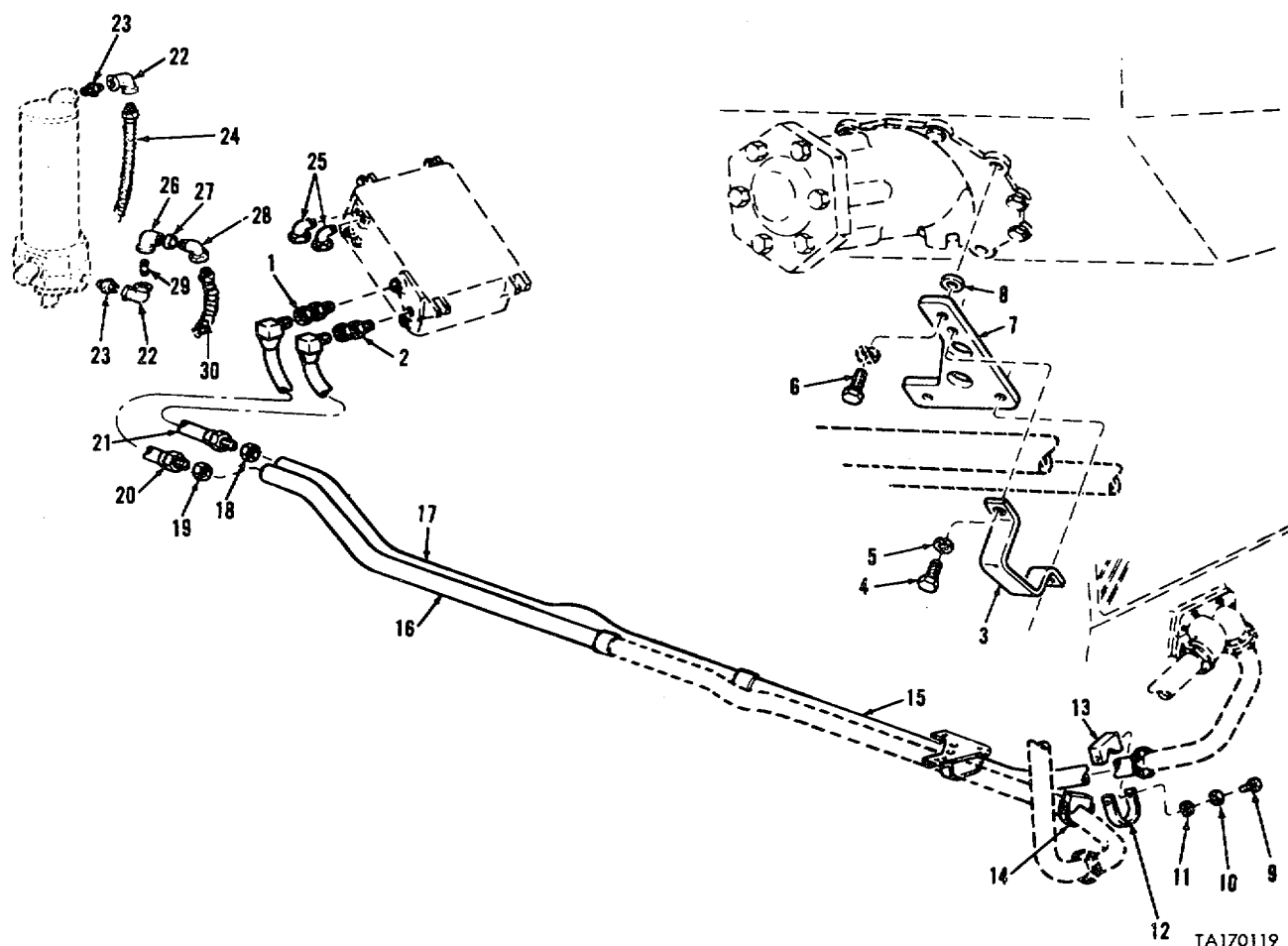
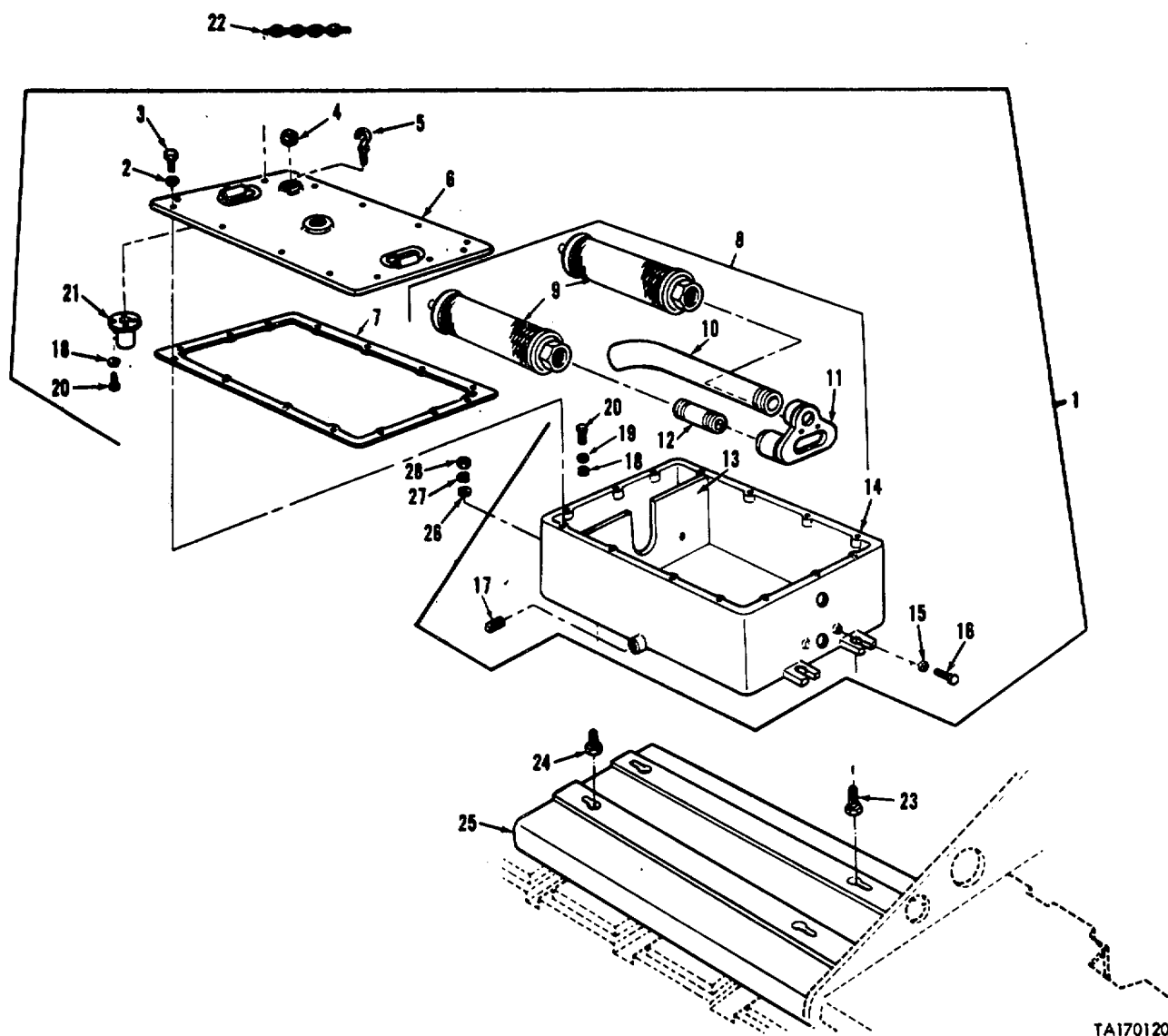


Figure E-24. Tubes and hoses to manifold valve.

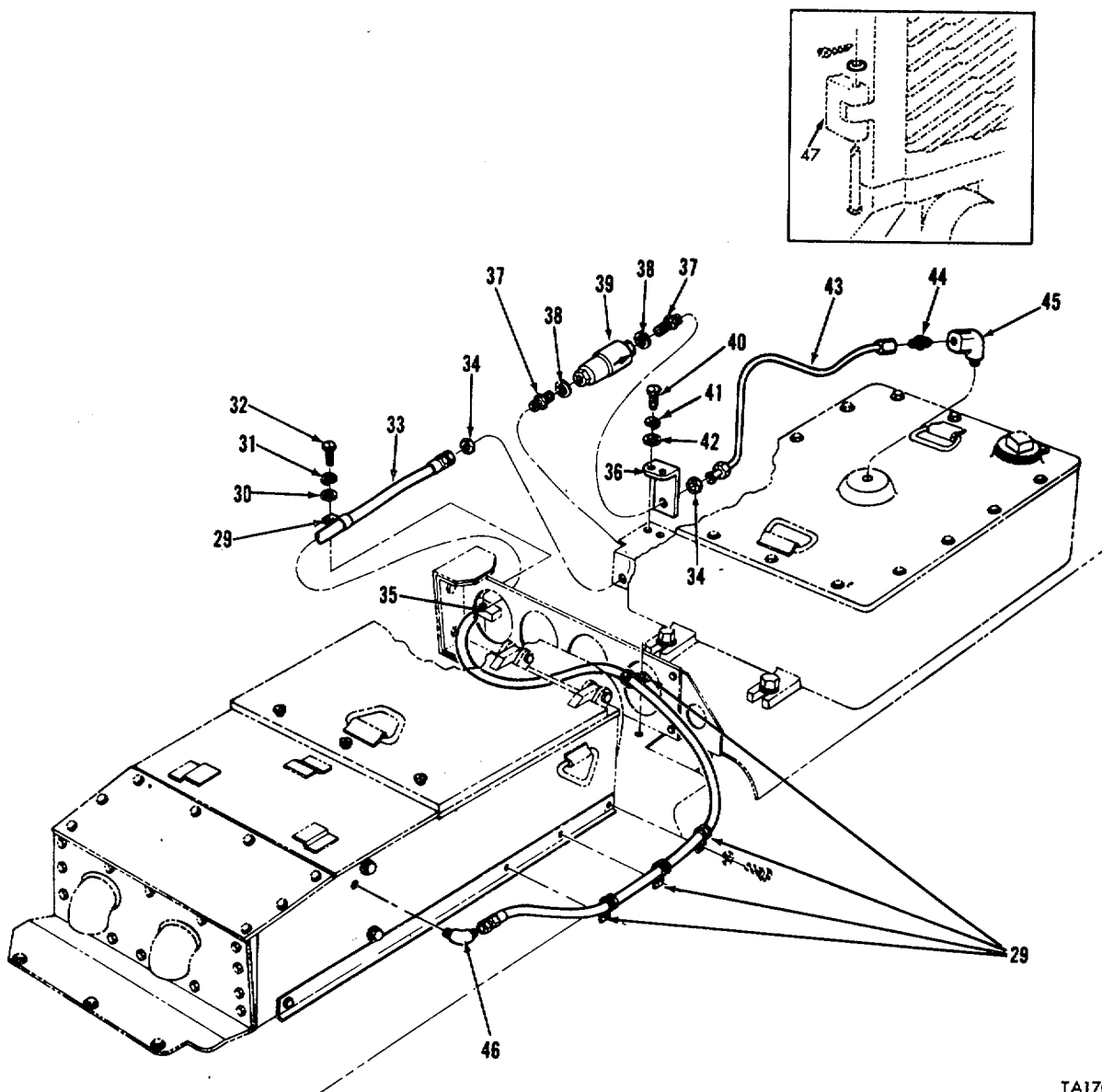
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-24	1	PAOZZ	4730-01-K80-6797	7363052	19207	GROUP: 2407 TUBES AND HOSES TO MANIFOLD VALVE		
E-24	2	PAOZZ	4730-00-090-9193	8396826	19207	UNION: HOSE TO CONTROL VALVE	EA	1
E-24	3	PBOZZ	10873961	19207		MANIFOLD COUPLING, PIPE: HOSE TO MANIFOLD	EA	1
E-24	4	PAOZZ	MS90727-206	96906		BRACKET: TUBE MTG	EA	5
						SCREW, CAP, HEXAGON: TUBE MTG	EA	10
E-24	5	PAOZZ	5310-00-754-2005	MS35338-52	96906	BRACKET		
E-24	6	PAOZZ	5305-00-904-4006	MS90727-215	96906	WASHER, LOCK: TUBE MTG BRACKET	EA	10
						SCREW, CAP, HEXAGON HEAD: BRACKET . TO TORSION BAR HOUSING	EA	10

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 2407 TUBES AND HOSES TO MANIFOLD VALVE - CONTINUED		
E-24	7	PBOZZ		10883645	19207	BRACKET: TUBE MTG,TORSION BAR..... HOUSING	EA	5
E-24	8	PAOZZ		10873955	19207	WASHER,FLAT: BRACKET TO TORSION BAR HOUSING	EA	10
E-24	9	PAOZZ	5305-00-719-5219	MS90727-111	96906	SCREW,CAP,HEXAGON HEAD: TUBE SUPPORT	EA	4
E-24	10	PAOZZ	5310-00-809-5998	MS27183-18	96906	WASHER,LOCK: TUBE SUPPORT	EA	4
E-24	11	PAOZZ	5310-00-584-5272	M535338-48	96906	WASHER,LOCK: TUBE SUPPORT	EA	4
E-24	12	PAOZZ	5340-00-403-9454	10915469-1	19207	SUPPORT: TUBE,HYDRAULIC	EA	1
E-24	13	PBOZZ	10887731	19207		BLOCK: TUBE SUPPORT	EA	2
E-24	14	PAOZZ	2590-00-403-9452	10915469-2	19207	SUPPORT: TUBE,HYDRAULIC	EA	1
E-24	15	PAOZZ	4710-01-044-8398	10883825	19207	TUBE ASSEMBLY: MANIFOLD TO..... CONTROL VALVE	EA	1
E-24	16	PAOZZ	4710-01-043-5232	10883887	19207	TUBE: RESERVOIR TO CONTROL VALVE ..	EA	1
E-24	17	PAOZZ	4710-00-477-3721	10883886	19207	TUBE: MANIFOLD TO CONTROL VALVE.....	EA	1
E-24	18	PAOZZ	2590-00-806-1147	7335557	19207	SEAL ASSEMBLY: MANIFOLD TO..... CONTROL VALVE,TUBE TO HOSE	EA	1
E-24	19	PAOZZ	2590-00-806-1130	7335558	19207	SEAL ASSY: CONTROL VALVE TO..... RESERVOIR,TUBE TO HOSE	EA	1
E-24	20	PAOZZ	4720-00-806-1145	8686844-2	19207	HOSE ASSEMBLY: CONTROL VALVE MANIFOLD	EA	1
E-24	21	PAOZZ	4720-00-806-1142	8686843-2	19207	HOSE ASSEMBLY: CONTROL VALVE MANIFOLD	EA	1
E-24	22	PAOZZ	4730-00-203-0030	7350920	19207	ELBOW,PIPE: CYLINDER TO HOSE, R AND L	EA	4
E-24	23	PAOZZ	4730-01-045-2687	8724192	19207	REDUCER,PIPE: CYLINDER TO ELBOW,.... R AND L	EA	4
E-24	24	PAOZZ	3720-00-806-1184	10899964	19207	HOSE ASSEMBLY: CYLINDER TO MANIFOLD L AND R	EA	2
E-24	25	PAOZZ	4730-00-900-1132	10899963	19207	ELBOW,PIPE: HOSE TO MANIFOLD..... L AND R	EA	4
E-24	26	PAOZZ		7339970	19207	ELBOW,PIPE: CYLINDER TO HOSE, LAND R	EA	2
E-24	27	PAOZZ	2590-00-806-1146	7324411	19207	SEAL ASSEMBLY: CYLINDER TO HOSE,.... L AND R	EA	2
E-24	28	PAOZZ	4730-00-900-8663	10899965	19207	ELBOW,PIPE: CYLINDER TO HOSE,L AND R	EA	2
E-24	29	PAOZZ	4730-01-063-5925	10905215	19207	NIPPLE,PIPE: CYLINDER TO HOSE,L..... AND R	EA	2
E-24	30	PAOZZ	2590-00-806-1185	10900387	19207	HOSE ASSEMBLY: CYLINDER TO MANIFOLD L AND R	EA	2



TA170120

Figure E-25. Reservoir assembly (sheet 1 of 2).



TAI70121

Figure E-25. Reservoir assembly (sheet 2 of 2).

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 2408 M9 BULLDOZER RESERVOIR		
E-25	1	PAOFF		12257383	19207	RESERVOIR ASSEMBLY: HYDRAULIC..... CYLINDER	EA	1
E-25	2	PAOZZ	5610-00-637-9541	MS35338-46	96906	WASHER,LOCK	EA	14
E-25	3	PAOZZ	5305-00-068-0511	MS90728-62	96906	SCREW,CAP,HEXAGON HEAD.....	EA	14
E-25	4	PAOZZ	2590-00-656-3614	7699887	19207	PLUG ASSEMBLY,FILLER: RESERVOIR	EA	1
E-25	5	PAOZZ	2590-00-806-1174	10883760	19207	GAGE ROD LIQUID LEVEL: RESERVOIR	EA	1
E-25	6	PBOZZ		10883625	19207	COVER ASSEMBLY: HYDRAULIC..... RESERVOIR	EA	1
E-25	7	PAOZZ	2590-00-806-1148	10883624	19207	GASKET: HYDRAULIC RESERVOIR	EA	1
E-25	8	AFFFF	2590-00-125-3845	10883698	19207	MANIFOLD ASSEMBLY: RESERVOIR.....	EA	1
E-25	9	PAOZZ	2590-00-806-1127	7087542	19207	FILTER,FLUID,PRESSURE: RESERVOIR MANIFOLD	EA	2
E-25	10	PBOZZ	4710-01-052-0736	10883786	19207	TUBE: RESERVOIR MANIFOLD.....	EA	1
E-25	11	PAOZZ	2520-01-037-5252	10883671	19207	MANIFOLD: RESERVOIR	EA	1
E-25	12	PAOZZ	5305-00-054-9286	MS51953-172	96906	NIPPLE: RESERVOIR MANIFOLD	EA	2
E-25	13	XAOZZ		10883663	19207	BAFFLE: RESERVOIR	EA	1
E-25	14	XAOZZ		12257469	19207	RESERVOIR: HYDRAULIC.....	EA	1
E-25	15	PAOZZ	5330-00-601-4932	7324392	19207	SEAL,PLAIN: RESERVOIR MANIFOLD.....	EA	2
E-25	16	PAOZZ	5305-00-719-5235	MS90727-114	96906	SCREW,CAP,HEXAGON HEAD: TO	EA	2
E-25	17	PAOZZ	4700-01-K80-2999	MS51884-7C	96906	ATTACH RESERVOIR MANIFOLD PLUG,PIPE: RESERVOIR DRAIN	EA	1
E-25	18	PAOZZ	5310-00-582-5965	MS35338-44	96906	WASHER,LOCK	EA	7
E-25	19	PAOZZ	5310-00-809-4058	MS27183-10	96906	WASHER,FLAT: RESERVOIR BAFFLE	EA	3
E-25	20	PAOZZ	5305-00-071-2506	MS90728-3	96906	SCREW,CAP,HEXAGON HEAD	EA	7
E-25	21	PAOZZ	2940-00-806-1173	10883720	19207	STRAINER ELEMENT,SEDIMENTS:..... HYDRAULIC RESERVOIR	EA	1
E-25	22	PAOZZ		8381659	19207	CHAIN ASSEMBLY,SINGLE LEG: COVER ... ASSEMBLY	EA	1
E-25	23	PAOZZ	5306-00-463-3883	10883763	19207	BOLT,MACHINE: RESERVOIR AND GUARD TO FENDER	EA	2
E-25	24	PAOZZ	5306-00-481-3669	10883650	19207	BOLT,EXTERNALLY RELIEVED:	EA	2
E-25	25	PBOZZ	5340-01-037-5431	10883600	19207	RESERVOIR TO PLATE PLATE: FENDER,RESERVOIR SUPPORT ...	EA	1
E-25	26	PAOZZ	5310-00-951-7209	MS27183-22	96906	WASHER,FLAT: RESERVOIR TO PLATE.....	EA	2
E-25	27	PAOZZ	5310-00-584-7888	MS35338-51	96906	WASHER,LOCK: RESERVOIR TO PLATE....	EA	2
E-25	28	PAOZZ	5310-00-763-8894	MS51968-24	96906	NUT,PLAIN,HEXAGON: RESERVOIR	EA	2
E-25	29	PAOZZ	5340-00-053-8994	MS21333-126	96906	TO PLATE CLAMP,LOOP: RESERVOIR HOSE	EA	5

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-25	30	PAOZZ	5310-00-080-6004	MS27183-14	96906	GROUP: 2408 M9 BULLDOZER RESERVOIR-CONTINUED WASHER,FLAT	EA	2
E-25	31	PAOZZ	5310-00-637-9541	MS35338-46	96906	WASHER,LOCK: RESERVOIR HOSE CLAMP	EA	1
E-25	32	PAOZZ	5305-00-721-5492	MS90728-57	96906	SCREW,CAP,HEXAGON HEAD:	EA	1
E-25	33	PAOZZ	4720-01-048-9355	MS28762-6-0740	96906	RESERVOIR HOSE CLAMP HOSE ASSY: RESERVOIR AIR FILTER.....	EA	1
E-25	34	PAOZZ	5310-00-839-2066	MS35691-45	96906	NUT,PLAIN,HEXAGON: RESERVOIR.....	EA	2
E-25	35	PBOZZ	5340-01-041-3374	12257377	19207	BREATHING FILTER PLATE: RESERVOIR AIR FILTER.....	EA	1
E-25	36	PAOZZ	5340-01-043-8016	12257379	19207	BRACKET: FILTER TO RESERVOIR	EA	1
E-25	37	PAOZZ	4730-01-035-3164	MS51812-25	96906	NIPPLE: BREATHING FILTER	EA	2
E-25	38	PAOZZ	5330-00-804-5695	MS28778-6	96906	PACKING,PREFORMED: BREATHING	EA	2
E-25	39	PAOZZ	1650-00-497-7296	AN6240-1	88044	FILTER FILTER: RESERVOIR BREATHING.....	EA	1
E-25	40	PAOZZ	5305-00-225-3844	MS90728-4	96906	SCREW,CAP,HEXAGON HEAD: FILTER.....	EA	2
E-25	41	PAOZZ	5310-00-582-5965	MS35338-44	96906	BRACKET WASHER,LOCK FILTER BRACKET	EA	2
E-25	42	PAOZZ	5310-00-809-4058	MS27183-10	96906	WASHER,FLAT: FILTER BRACKET	EA	2
E-25	43	PAOZZ	4710-00-043-5227	12257381	19207	TUBE ASSY: FILTER TO RESERVOIR	EA	1
E-25	44	PAOZZ	4730-01-035-7544	MS51819-37	96906	ADAPTER ASSY: TUBE TO RESERVOIR.....	EA	1
E-25	45	PAOZZ	4730-01-041-3371	12257378	19207	ELBOW: RESERVOIR COVER	EA	1
E-25	46	PAOZZ	4730-00-451-6098	MS51815-37	96906	ELBOW: HOSE TO AIR CLEANER.....	EA	1
E-25	47	PAOZZ	5310-00-830-9803	7027834	19207	WASHER,FLAT: GRILLE DOOR HINGE	EA	1
						PIN		

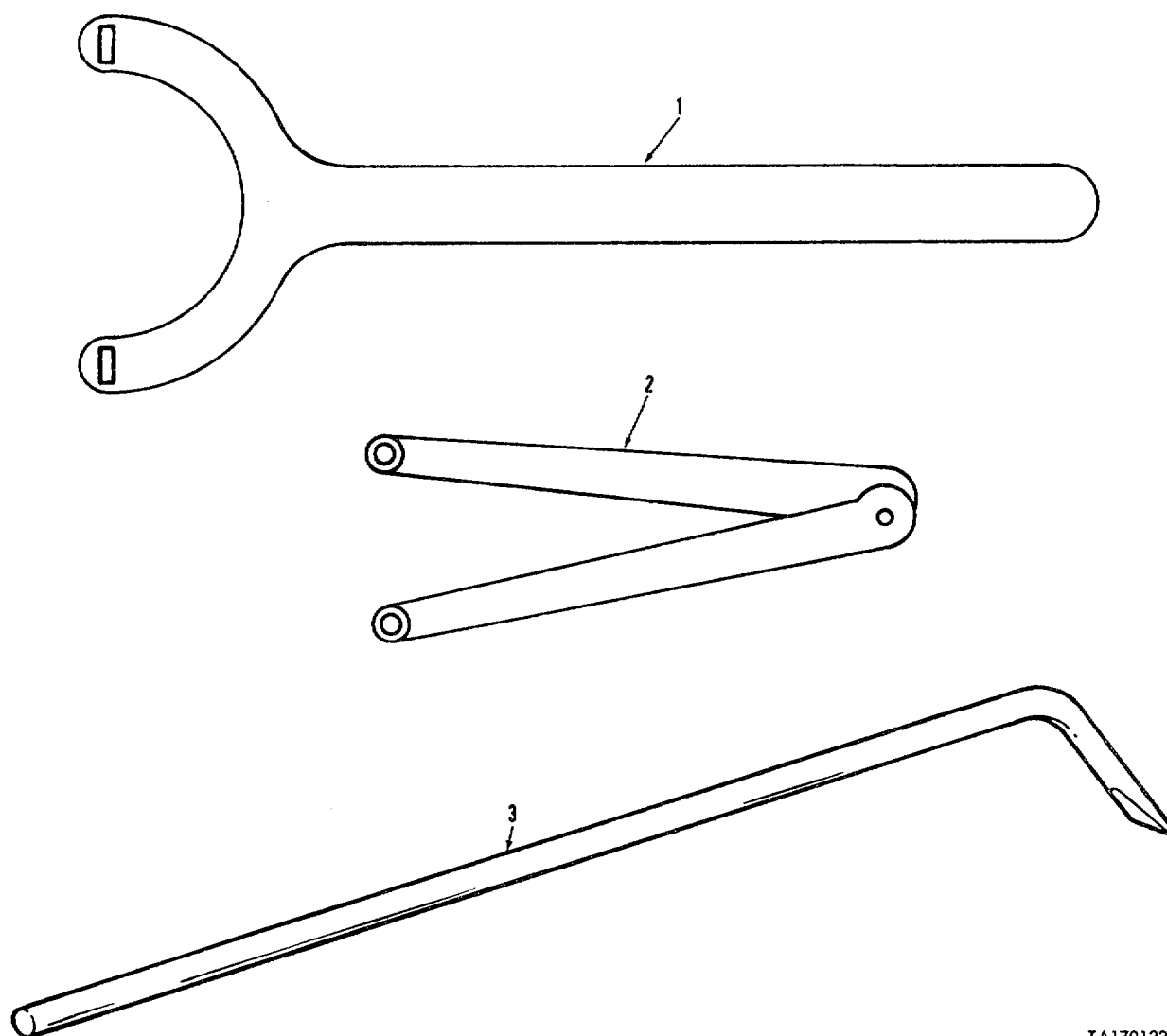


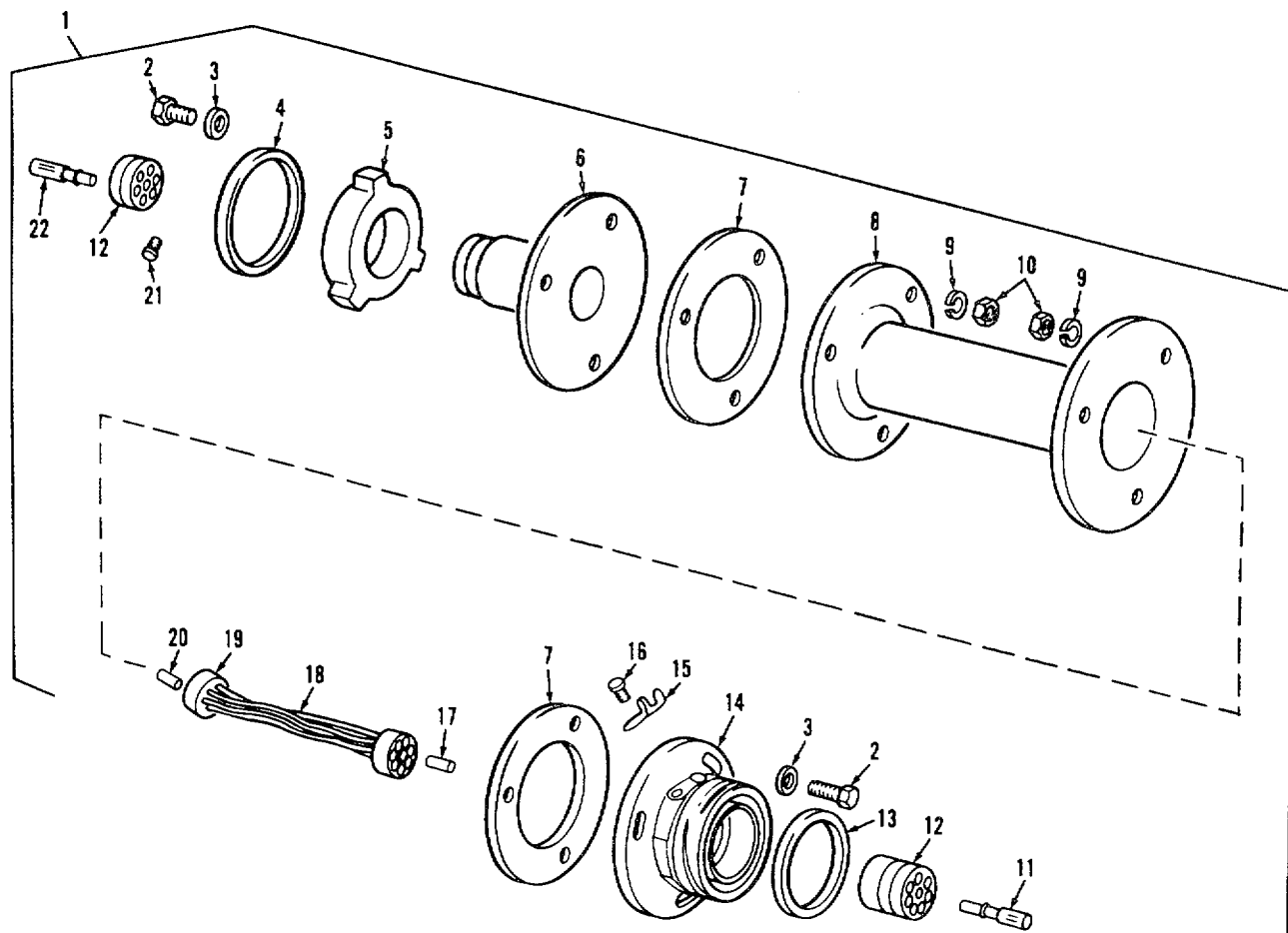
Figure E-26. Special Tools.

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Figure E-26. Special Tools.

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-26	1	PEFZZ	5120-00-907-9001	10952095	19207	GROUP: 26 TOOLS AND TEST EQUIPMENT GROUP: 2604 SPECIAL TOOLS WRENCH, SPANNER: REMOVE AND INSTALL THREADED RETAINER IN RIGHT-ANGLE DRIVE	EA	1
E-26	2	PEFZZ	MS16146-2	96906	WRENCH	WRENCH, SPANNER: REMOVE AND INSTALL THREADED RING FROM MAGNETIC CLUTCH ASSEMBLY	EA	1
E-26	3	PEOZZ	512200-179--5667	7953545	19207	TOOL, CLUTCH ADJUSTING: (EARLY MODEL BULLDOZER)	EA	1

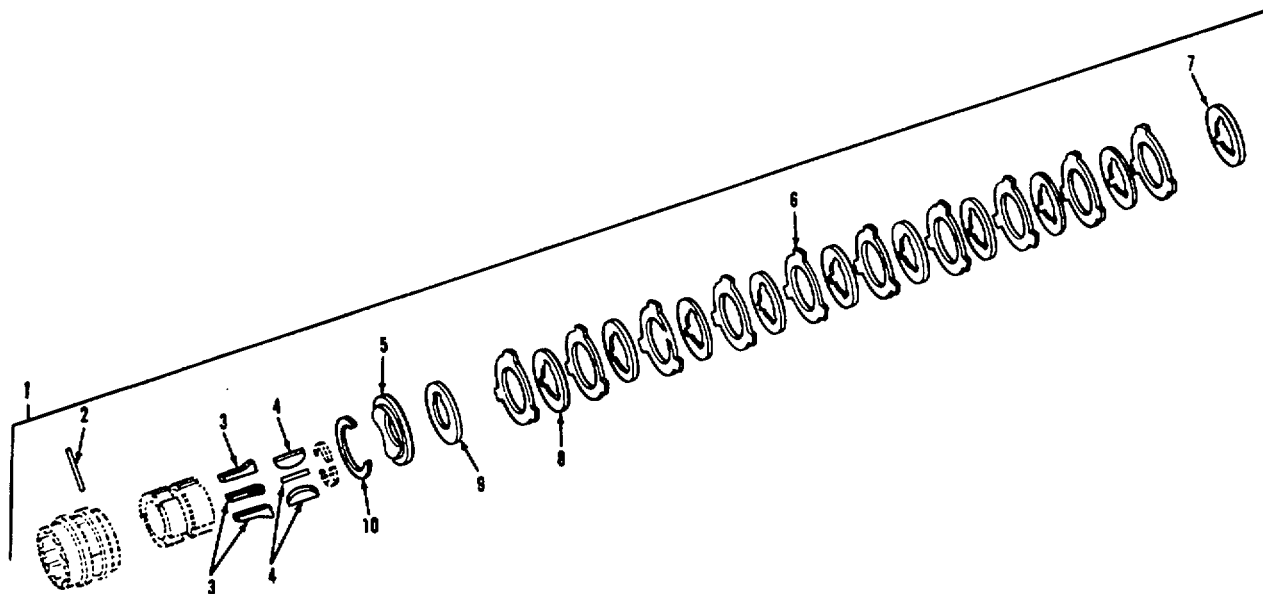
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TA170123

Figure E-27. Headlamp adapter assembly (early model bulldozer).

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP 06: ELECTRICAL SYSTEM (EARLY MODEL BULLDOZER) 0609: LIGHTS		
E-27	1	PAOFZ	6220-00-647-3935	10940235	19207	ADAPTER ASSEMBLY: HEADLIGHT	EA	2
E-27	2	PAFZZ	5305-00-267-8974	MS90726-8	96906	MOUNTING SCREW,CAP,HEXAGON HEAD: BASE	EA	6
E-27	3	PAFZZ	5310-00-809-4058	MS27183-10	96906	AND HOLDER TO ADAPTER WASHER,FLAT: BASE AND HOLDER	EA	6
E-27	4	PAFZZ	6220-00-179-8976	7972330	19207	TO ADAPTER RING: HEADLAMP MOUNTING.....	EA	1
E-27	5	PAFZZ	5310-00-797-2040	7972351	19207	NUT,ADJUSTMENT: HEADLAMP.....	EA	1
E-27	6	PAFZZ	2540-00-231-7483	7383590	19207	HOLDER: HEADLAMP	EA	1
E-27	7	PAFZZ	5330-00-297-7092	7970024	19207	GASKET: HEADLAMP	EA	2
E-27	8	PAFZZ	6220-00-417-2717	10934360	19207	ADAPTER: HEADLAMP	EA	1
E-27	9	PAFZZ	5310-00-582-5965	MS35338-44	96906	WASHER,LOCK: BASE AND HOLDER	EA	6
E-27	10	PAFZZ	5310-00-768-0319	MS51968-12	96906	TO ADAPTER NUT,PLAIN,HEXAGON: BASE AND.....	EA	6
E-27	11	PAFZZ	5999-00-485-8954	7716520	19204	HOLDER TO ADAPTER CONTACT,ELECTRICAL: HEADLAMP.....	EA	7
E-27	12	PAFZZ	5935-00-771-8192	7723475	19207	BASE 1NINSERT: HEADLAMP BASE	EA	2
E-27	13	PAFZZ	2590-00-047-4096	7972333	19207	GASKET: HEADLAMP BASE	EA	1
E-27	14	PAFZZ	6220-00-709-1836	7972352	19207	BASE: HEADLAMP	EA	1
E-27	15	PAOZZ	5340-00-647-3933	7739925	19207	CLIP,SPRING TENSION:	EA	1
E-27	16	PAOZZ	5305-00-022-8288	JWP42-159	03032	SCREW,LOCKWASHER: HEADLAMP	EA	1
E-27	17	PAFZZ	9390-00-180-7289	8724763	19207	BASE ROD: HEADLAMP BASE	EA	1
E-27	18	PAFZZ	6145-00-772-0583	MILC13486	81349	CABLE: BASF ASSEMBLY	FT	V
E-27	19	PAFZZ	5340-00-772-2322	7722322	19207	GROMMET: HEADLAMP HOLDER.....	EA	2
E-27	20	PAFZZ	2920-00-695-6223	7064704	19207	ROD: HEADLAMP	EA	1
E-27	21	PAFZZ	5320-00-994-7076	MS20613-3P4	96906	RIVET,SOLID: ADAPTER,HEADLAMP.....	EA	1
E-27	22	PAFZZ	5999-00-485-8955	7716521	19207	PIN: ADAPTER HEADLAMP GROMMET.....	EA	7

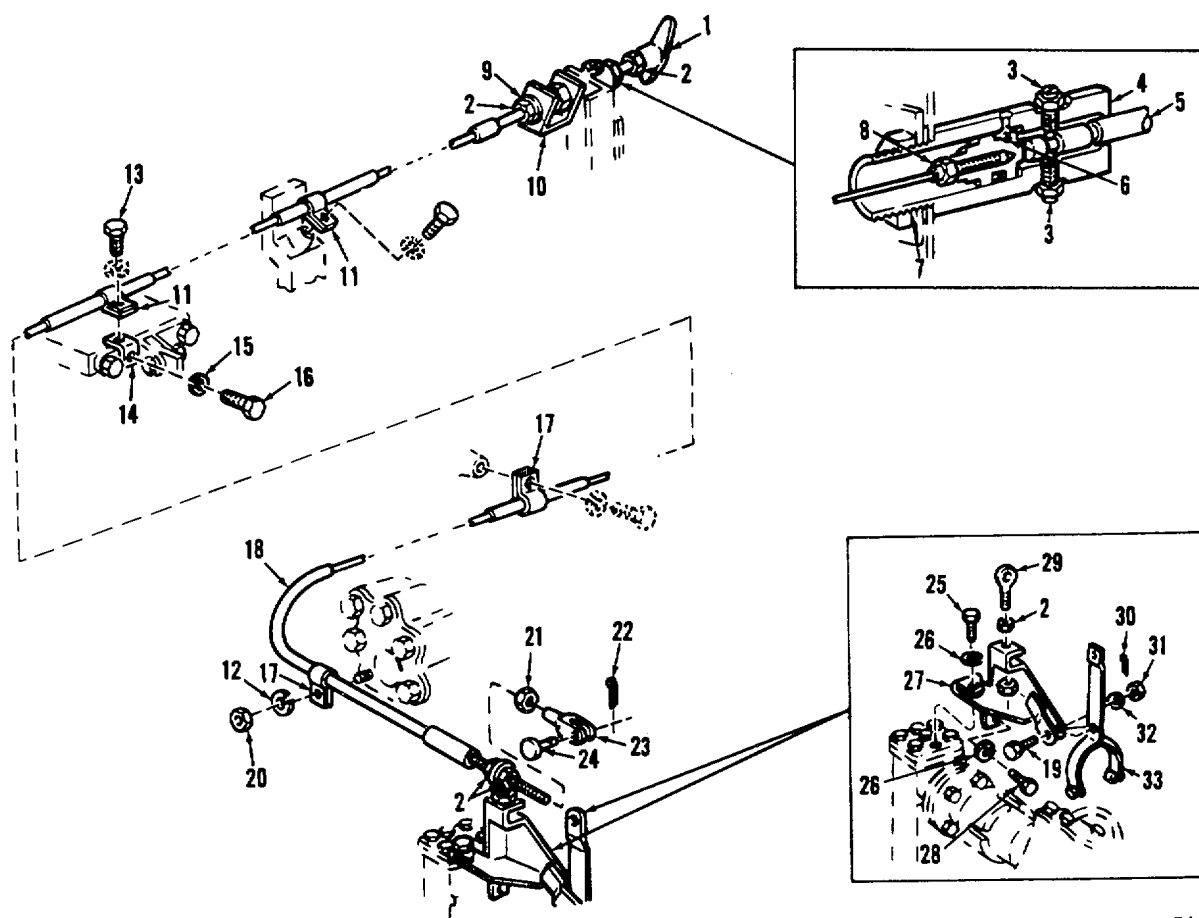


TA170124

Figure E-28. Clutch assembly (early model bulldozer).

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-28	1	PAFFF	2520-00-653-9216	7049996	19207	GROUP: 2004 HYDRAULIC PUMP CLUTCH (EARLY MODEL BULLDOZER)		
E-28	2	PAFZZ	5315-00-708-2935	10870570	19207	CLUTCH, HYDRAULIC PUMP: RIGHT-..... ANGLE DRIVE	EA	1
E-28	3	PAFZZ	2590-00-707-1227	8395421	19207	PIN, STRAIGHT, HEADLESS: CLUTCH.....	EA	1
E-28	4	PAFZZ	5315-00-708-2934	8395420	19207	ASSEMBLY	EA	3
E-28	5	PAFZZ	2590-00-707-1226	8395423	19207	PAWL: CLUTCH ASSEMBLY.....	EA	3
E-28	6	PAFZZ	2590-00-707-1232	8395427	19207	KEY, WOODRUFF: CLUTCH ASSEMBLY.....	EA	1
E-28	7	PAFZZ	2590-00-862-2682	8395424	19207	ADJUSTMENT COLLAR: CLUTCH.....	EA	1
E-28	8	PAFZZ	3010-00-540-5869	8395422	19207	ASSEMBLY	EA	10
E-28	9	PAFZZ	2590-00-707-1230	8395425	19207	DISK: OUTER, CLUTCH ASSEMBLY.....	EA	1
E-28	10	PAFZZ	2590-00-707-1231	8395426	19207	THRUST PLATE: CLUTCH ASSEMBLY.....	EA	9
						DISK: INNER, CLUTCH ASSEMBLY.....	EA	1
						PRESSURE PLATE: CLUTCH ASSEMBLY...	EA	1
						ADJUSTMENT LOCK SPRING: CLUTCH.....	EA	1
						ASSEMBLY		

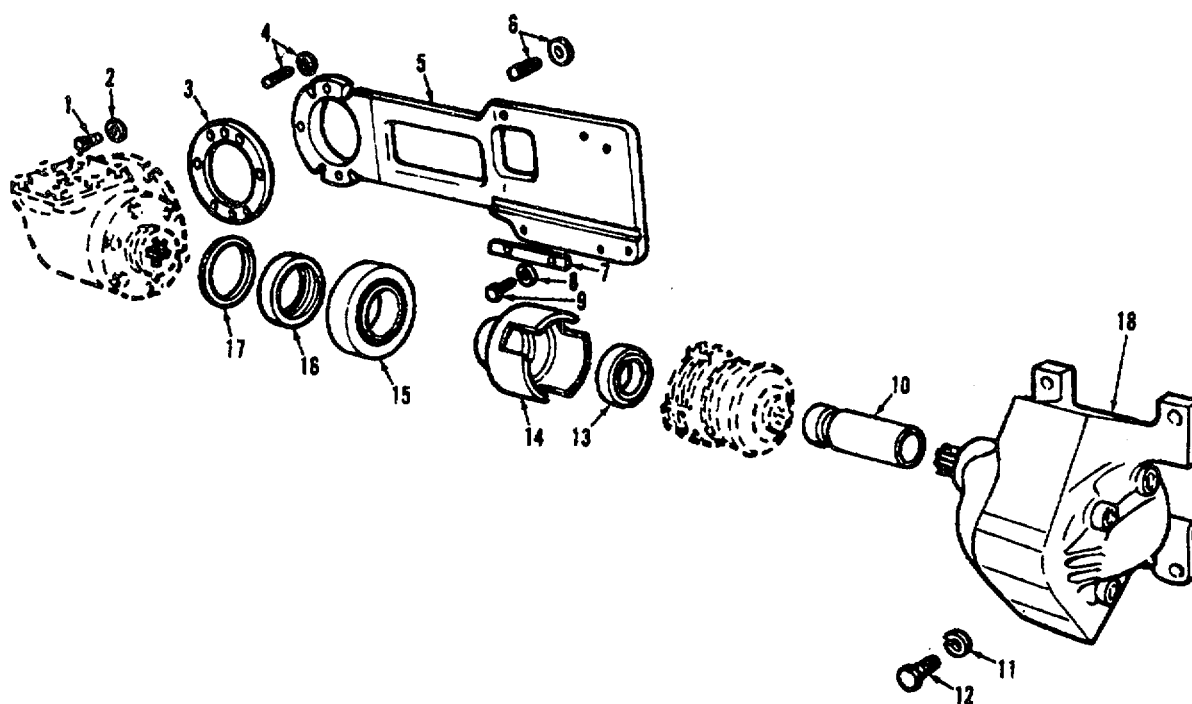
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TA170125

Figure E-29. Clutch control linkage (early model bulldozer).

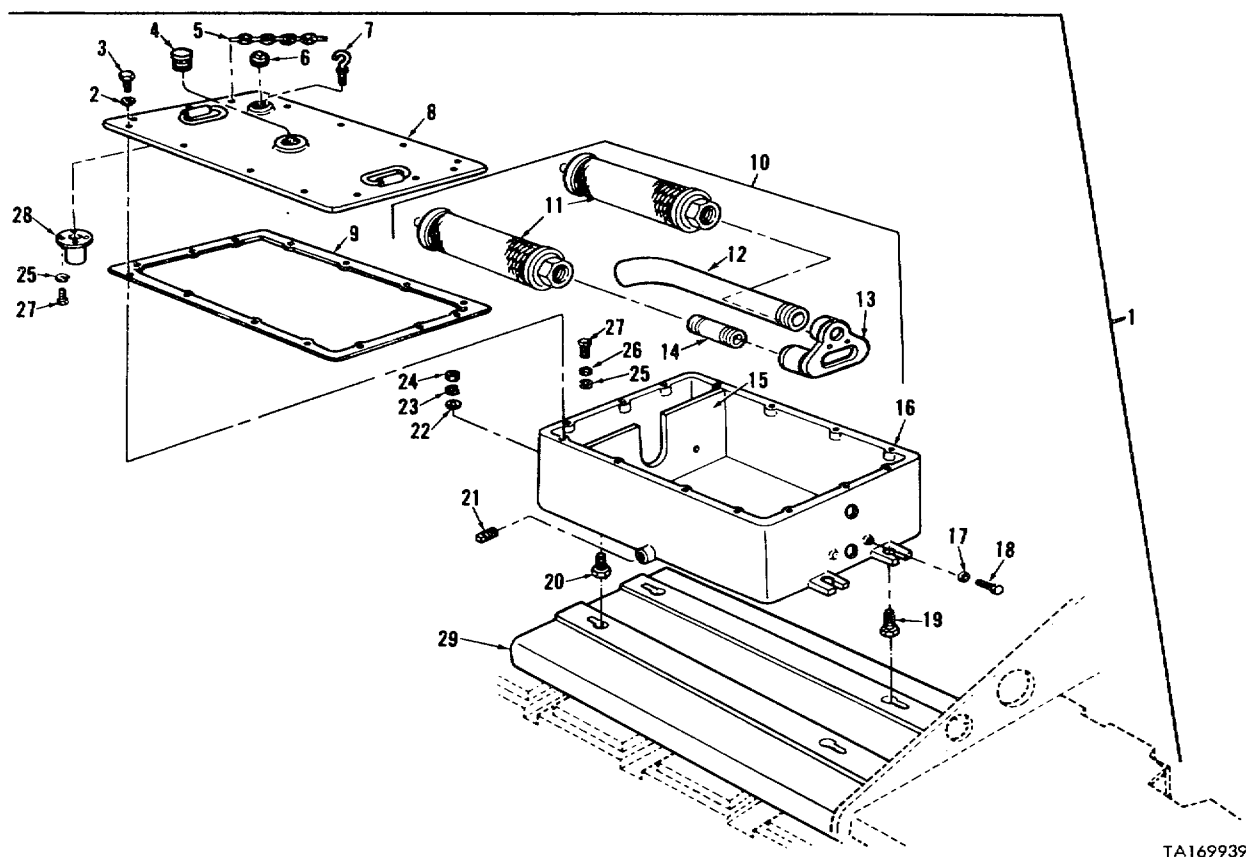
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 2004 CLUTCH CONTROL LINKAGE (EARLY MODEL BULLDOZER)		
E-29	1	PAOZZ	2590-00-889-1888	10911901	19207	HANDLE: CLUTCH CONTROL CABLE	EA	1
E-29	2	PAOZZ	5310-00-891-1797	MS35691-30	96906	NUT, PLAIN, HEXAGON: JAM NUT	EA	6
E-29	3	PAOZZ	5340-00-584-6469	7064418	19207	PLUNGER: CLUTCH CONTROL HANDLE ROD	EA	2
E-29	4	PAOZZ	2590-00-884-1979	10883676	19207	HOUSING: CLUTCH CONTROL ROD	EA	1
E-29	5	XAOZZ	2590-00-900-8485	10883672	19207	ROD: CONTROL CABLE HANDLE	EA	1
E-29	6	PAOZZ	5330-00-579-3156	MS28775-116	96906	GASKET: CONTROL ROD HOUSING	EA	1
E-29	7	PAOZZ	5330-00-900-8486	10883675	19207	GASKET: CONTROL ROD HOUSING	EA	1
E-29	8	PAOZZ	5310-00-822-1179	MS35691-428	96906	NUT, PLAIN, HEXAGON: CABLE JAM NUT	EA	1
E-29	9	PAOZZ	5310-00-809-4085	MS27183-16	96906	WASHER, FLAT: HOUSING JAM NUT	EA	2
E-29	10	PAOZZ	2590-00-351-2906	10887683	19207	BRACKET: CABLE SUPPORT	EA	1
E-29	11	PAOZZ	5340-00-984-8540	MS21333-102	96906	CLAMP: CLUTCH CONTROL CABLE	EA	2
E-29	12	PAOZZ	5310-00-637-9541	MS35338-46	96906	WASHER, LOCK: CABLE CLAMP	EA	1
E-29	13	PAOZZ	5305-00-267-8972	MS90726-1	96906	SCREW, CAP, HEXAGON HEAD: CABLE CLAMP	EA	1
E-29	14	XAOZZ		10883773	19207	BRACKET: CABLE CLAMP SUPPORT	EA	1
E-29	15	PAOZZ	5310-00-582-5965	MS35338-44	96906	WASHER, LOCK: SUPPORT BRACKET	EA	1
E-29	16	PAOZZ	5305-00-269-3241	MS90727-65	96906	SCREW, CAP, HEXAGON HEAD: SUPPORT	EA	1
E-29	17	PAOZZ	5340-00-738-4968	7384968	19207	CLAMP: CLUTCH CONTROL CABLE	EA	2
E-29	18	PAOZZ	2590-00-806-1126	7339977	19207	CABLE ASSEMBLY: CLUTCH CONTROL	EA	1
E-29	19	PAOZZ	5306-00-653-9540	7699987	19207	BOLT, SHOULDER: YOKE TO BRACKET	EA	1
E-29	20	PAOZZ	5310-00-931-3175	MS35691-10	96906	NUT, PLAIN, HEXAGON: CABLE CLAMP	EA	1
E-29	21	PAOZZ	5310-00-971-7989	MS35691-5	96906	NUT, PLAIN, HEXAGON: ROD END CLEVIS JAM NUT	EA	1
E-29	22	PAOZZ	5315-00-236-8365	MS24665-132	96906	PIN, COTTER: CLEVIS PIN	EA	1
E-29	23	PAOZZ	5340-00-865-9496	MS35812-2	96906	CLEVIS ROD END	EA	1
E-29	24	PAOZZ	5315-00-845-4232	MS35810-32	96906	PIN, STRAIGHT, HEADED: ROD END CLEVIS	EA	1
E-29	25	PAOZZ	5305-00-225-8499	MS90725-34	96906	BOLT: YOKE SUPPORT BRACKET	EA	1
E-29	26	PAOZZ	5310-00-407-9566	MS35338-45	96906	WASHER, LOCK	EA	2
E-29	27	PAOZZ	2590-00-760-5828	10863555	19207	BRACKET: YOKE SUPPORT	EA	1
E-29	28	PAOZZ	5306-00-225-8502	MS90725-38	96906	BOLT: YOKE SUPPORT BRACKET	EA	1
E-29	29	PAOZZ	2590-00-678-7853	10863768	19207	BEARING, PLAIN, ROD END: CLUTCH CONTROL	EA	1
E-29	30	PAOZZ	5315-00-839-5820	MS24665-134	96906	PIN, COTTER: YOKE TO BRACKET SUPPORT BOLT AND NUT	EA	1
E-29	31	PAOZZ	5310-00-849-6883	MS35692-13	96906	NUT, SLOTTED, HEXAGON: YOKE TO BRACKET	EA	1
E-29	32	PAOZZ	5310-00-081-4219	MS27183-12	96906	WASHER, FLAT: YOKE TO BRACKET	EA	1
E-29	33	PAOZZ	2590-00-087-4174	7699980	19207	YOKE: CLUTCH CONTROL	EA	1



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Figure E-30. Right-angle drive, clutch and hydraulic pump mounting bracket and related parts (early model bulldozer).

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-30	1	PAOZZ	5303-00-225-8500	MS90725-35	96906	GROUP: 20041 POWER TAKE-OFF ASSEMBLY (EARLY MODEL BULLDOZER)		
E-30	2	PAOZZ	5310-00-407-9566	MS35338-45	96906	SCREW, CAP, HEXAGON HEAD: RIGHT- ANGLE DRIVE TO MOUNT	EA	2
E-30	3	PAOZZ	5330-00-653-9546	7383694	19207	WASHER, LOCK: RIGHT-ANGLE DRIVE TO MOUNT	EA	2
E-30	4	PAOZZ	5340-00-200-4185	8386415	19207	GASKET: RIGHT-ANGLE DRIVE TO MOUNT	EA	1
E-30	5	PAOZZ	2590000-403-4815	7699961	19207	INSERT: RIGHT-ANGLE DRIVE MOUNTING SCREW	EA	2
E-30	6	PAOZZ	5340-00-670-7614	8386422	19207	BRACKET: RIGHT-ANGLE DRIVE, CLUTCH AND HYDRAULIC PUMP MOUNTING	EA	1
E-30	7	PAOZZ	2520-01-K60-4296	7383719	19207	INSERT: HYDRAULIC PUMP MOUNTING SCREW	EA	4
E-30	8	PAOZZ	5310-00-194-9211	MS35336-27	96906	KEY: MOUNTING BRACKET	EA	1
E-30	9	PAOZZ	5305-00-958-5247	MS35190-291	96906	WASHER, LOCK: MOUNTING BRACKET KEY	EA	2
E-30	10	PAOZZ	2520-00-653-9218	7699893	19207	SCREW, MACHINE: MOUNTING BRACKET KEY	EA	2
E-30	11	PAOZZ	5310-00-637-9541	MS35338-46	96906	SHAFT: CLUTCH TO HYDRAULIC PUMP	EA	1
E-30	12	PAOZZ	5305-00-269-4511	MS90725-63	96906	WASHER, LOCK: HYDRAULIC PUMP TO MOUNT	EA	4
E-30	13	PAOZZ	3110-00-114-5987	7049996	19207	SCREW, CAP, HEXAGON HEAD: HYDRAULIC PUMP TO MOUNT	EA	4
E-30	14	PAOZZ	2520-0(-653-9217	7699942	19207	BEARING, BALL, ANNULAR: CLUTCH SHAFT	EA	1
E-30	15	PAOZZ	3110-00-277-0423	7331621	19207	CLUTCH HALF, POSITIVE: RIGHT-ANGLE DRIVE	EA	1
E-30	16	PAOZZ	5310-00-653-9542	7383690	19207	BEARING: CLUTCH HALF	EA	1
E-30	17	PAOZZ	5310-00-653-9539	7383691	19207	NUT: CLUTCH ADJUSTMENT	EA	1
E-30	18	PAOFF	2520-00-653-9221	7049999	19207	NUT, LOCK: CLUTCH ADJUSTMENT	EA	1
E-30						PUMP ASSEMBLY, HYDRAULIC	EA	1

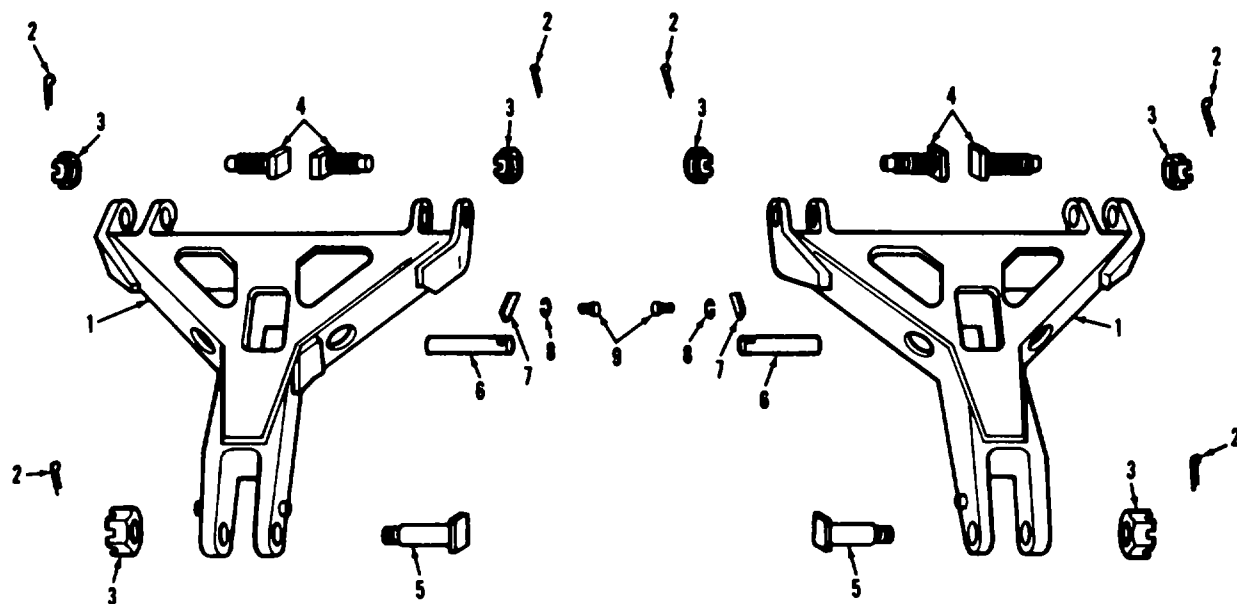


TA169939

Figure E-31. Reservoir assembly (early model bulldozer).

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6) DESCRIPTION	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	QTY INC IN UNIT
E-31	1	XBOZZ		10883628	19207	GROUP: 20042 RESERVOIR (EARLY MODEL BULLDOZER) RESERVOIR ASSEMBLY	EA	1
E-31	2	PAOZZ	5310-00-637-9541	MS35338-46	96906	WASHER, LOCK: COVER ASSEMBLY	EA	14
E-31	3	PAOZZ	5305-00-068-0511	MS90728-62	96906	SCREW, CAP, HEXAGON HEAD: COVER ASSEMBLY	EA	14
E-31	4	PAOZZ	4730-00-807-2886	7087541	19207	PLUG, BREATHER: RESERVOIR COVER	EA	1
E-31	5	PAOZZ		8381659	19207	CHAIN ASSEMBLY, SINGLE LEG: COVER ASSEMBLY	EA	1
E-31	6	PAOZZ	2590-00-656-3614	7699887	19207	PLUG ASSEMBLY, FILLER: HYDRAULIC RESERVOIR	EA	1

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-31	7	PAOZZ	2590-00-806-1174	10883760	19207	GROUP: 20043 RESERVOIR(EARLY MODEL BULLDOZER) - CONTINUED GAGE ROD, LIQUID LEVEL: HYDRAULIC RESERVOIR	EA	1
E-31	8	PBOZZ		10883625	19207	COVER ASSEMBLY: HYDRAULIC RESERVOIR	EA	1
E-31	9	PAOZZ	2590-00-806-1148	10883624	19207	GASKET: HYDRAULIC RESERVOIR COVER	EA	1
E-31	10	AFOFF		10883698	19207	MANIFOLD ASSEMBLY: RESERVOIR	EA	1
E-31	11	PAOZZ	2590-00-806-1127	7087542	19207	FILTER, FLUID PRESSURE: RESER- PUMP	EA	2
E-31	12	PBOZZ		10883786	19207	TUBE: RESERVOIR MANIFOLD	EA	1
E-31	13	PAOZZ	2520-01-037-5252	10883671	19207	MANIFOLD: RESERVOIR	EA	1
E-31	14	PAOZZ	5305-00-054-9286	MS51953-72	96906	NIPPLE: RESERVOIR, MANIFOLD	EA	2
E-31	15	XAOZZ		10883663	19207	BAFFLE: HYDRAULIC RESERVOIR	EA	1
E-31	16	XAOZZ		10883697	19207	RESERVOIR: HYDRAULIC	EA	1
E-31	17	PAOZZ		7324392	19207	SEAL: MANIFOLD ASSEMBLY	EA	2
E-31	18	PAOZZ	5305-00-719-5235	MS90727-114	96906	SCREW, CAP, HEXAGON HEAD: MANIFOLD ASSEMBLY	EA	2
E-31	19	PAOZZ	5306-00-463-3883	10883763	19207	BOLT, EXTERNALLY RELIEVED: HYDRAULIC RESERVOIR MOUNTING	EA	2
E-31	20	PAOZZ	5306-00-481-3669	10883650	19207	BOLT, EXTERNALLY RELIEVED: HYDRAULIC RESERVOIR MOUNTING	EA	2
E-31	21	PAOZZ	4730-00-289-5176	MS49005-8	96906	PLUG, PIPE: DRAIN HYDRAULIC	EA	1
E-31	22	PAOZZ	5310-00-951-7209	MS27183-22	96906	WASHER, FLAT: HYDRAULIC RESERVOIR MOUNTING	EA	4
E-31	23	PAOZZ	5310-00-584-7888	MS35338-51	96906	WASHER, LOCK: HYDRAULIC RESERVOIR MOUNTING	EA	4
E-31	24	PAOZZ	5310-00-763-8894	MS51968-24	96906	NUT, PLAIN, HEXAGON: RESERVOIR MOUNTING	EA	4
E-31	25	PAOZZ	5310-00-582-5965	MS35338-44	96906	WASHER, LOCK: HYDRAULIC RESERVOIR BAFFLE (3), SCREEN ASSEMBLY (4)	EA	7
E-31	26	PAOZZ	5310-00-809-4058	MS27183-10	96906	WASHER, FLAT: HYDRAULIC RESERVOIR BAFFLE	EA	3
E-31	27	PAOZZ	5305-00-071-2506	MS90728-3	96906	SCREW, CAP, HEXAGON HEAD: HYDRAULIC RESERVOIR BAFFLE (3), SCREEN ASSEMBLY (4)	EA	7
E-31	28	PAOZZ	2940-00-806-1173	10883720	19207	STRAINER ELEMENT, SEDIMENTS: HYDRAULIC RESERVOIR	EA	1
E-31	29	PBOZZ	5310-01-037-5431	10883600	19207	FENDER, RESERVOIR SUPPORT	EA	1

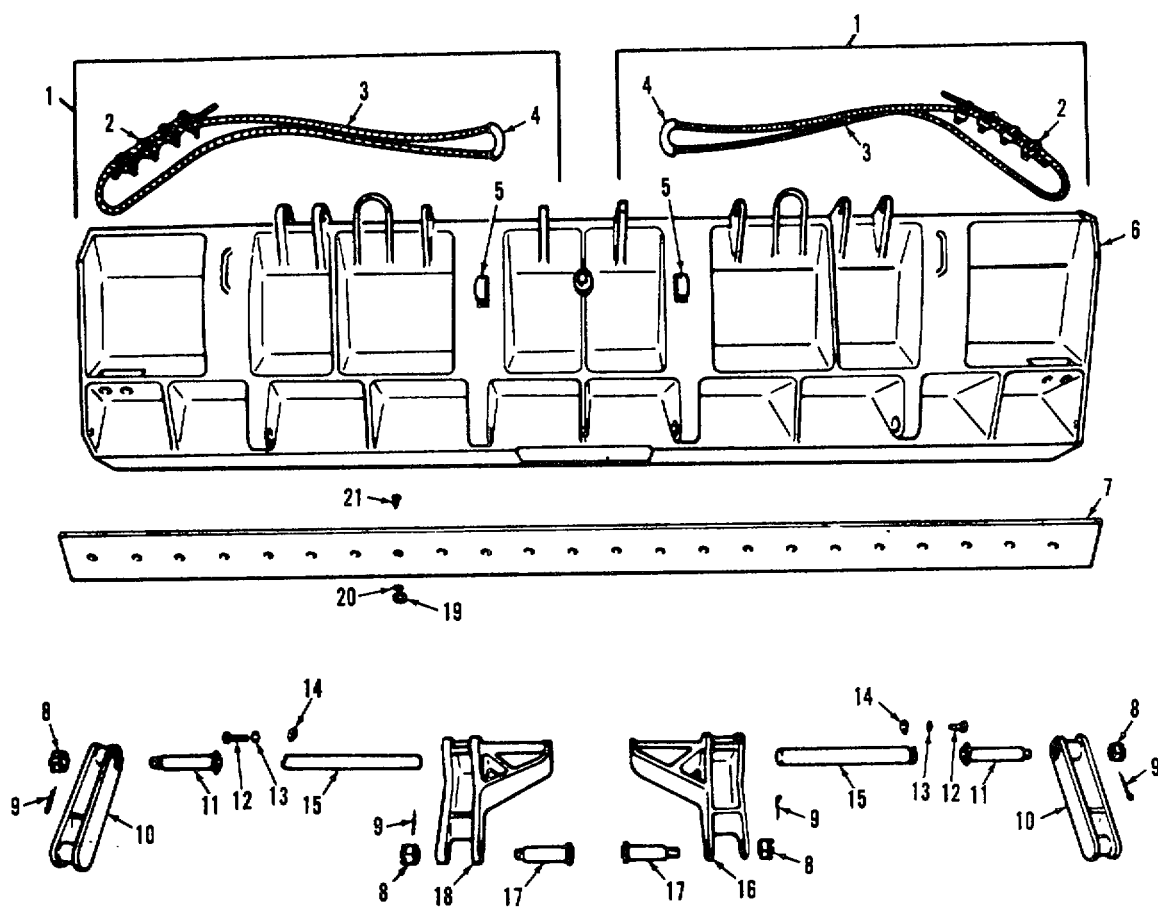


TA169940

Figure E-32. Pushbeams and related parts (early model bulldozer).

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-32	1	PAOZZ	2590-00-653-9532	8381771	19207	GROUP: 2006 PUSHBEAMS AND RELATED PARTS (EARLY MODEL BULLDOZER) PUSHBEAM ASSEMBLY: MOLDBOARD	EA	2
E-32	2	PAOZZ	5315-00-059-0238	MS24665-753	96906	PIN, COTTER: 3/8 x 3-1/2, PUSHBEAM TO MOLDBOARD (4), PUSHBEAM TO BRACKET (2)	EA	6
E-32	3	PAOZZ	5310-00-842-7634	MS35692-109	96906	NUT, SLOTTED, HEXAGON: 1-3/4-10UNF-3, 2-3/4W, 1-23/32 THK, PUSHBEAM TO MOLDBOARD (4), PUSHBEAM TO BRACKET (2)	EA	6
E-32	4	PAOZZ	5306-00-732-3289	7323289	19207	PIN ASSEMBLY: PUSHBEAM TO MOLDBOARD	EA	4
E-32	5	PAOZZ		7323820	19207	PIN ASSEMBLY: PUSHBEAM TO BRACKET	EA	2
E-32	6	PAOZZ	5315-00-316-0884	7359964	19207	PIN: PUSHBEAM PIVOT LINK	EA	2
E-32	7	PAOZZ	2520-00-732-3827	7323827	19207	LOCK: PUSHBEAM PIVOT LINK PIN	EA	2
E-32	8	PAOZZ	5310-00-800-0695	MS35335-39	96906	WASHER, LOCK: PUSHBEAM PIVOT LINK PIN LOCK	EA	2
E-32	9	PAOZZ	5305-00-725-4109	MS90726-163	96906	SCREW, CAP, HEXAGON HEAD: 5/8-18UNF- 2A x 1-3/4, BEAM PIVOT PIN LOCK	EA	2

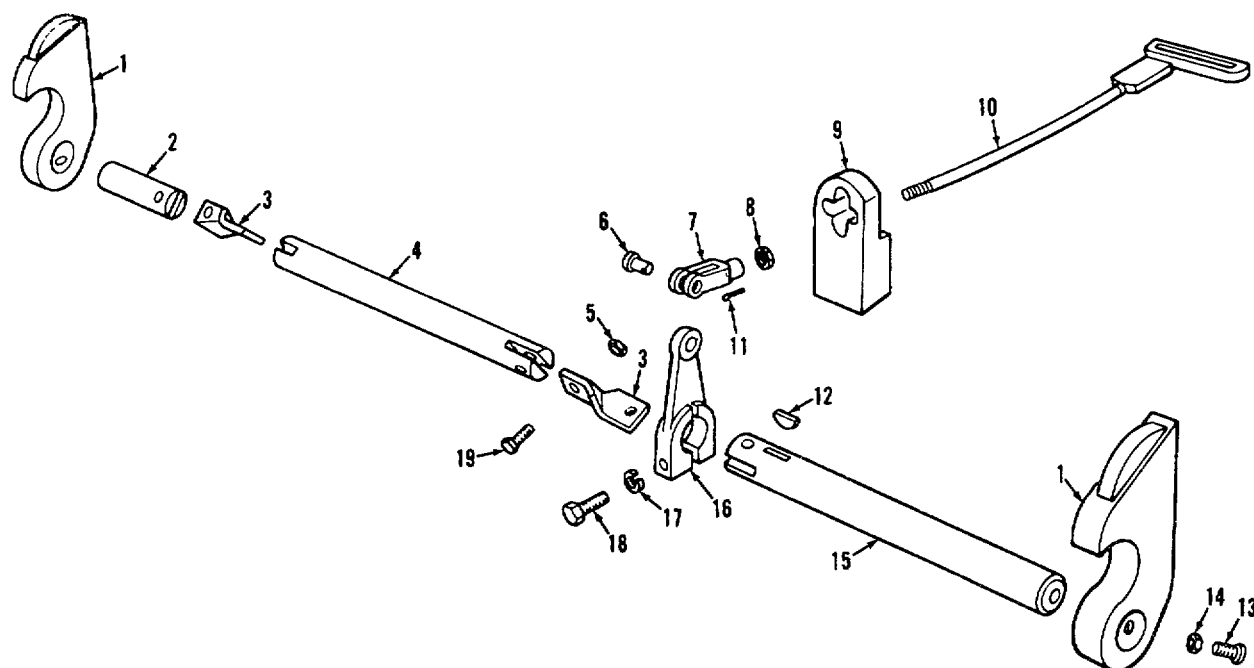
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TA169941

Figure E-33. Moldboard, tilt arms, and related parts (early model bulldozer).

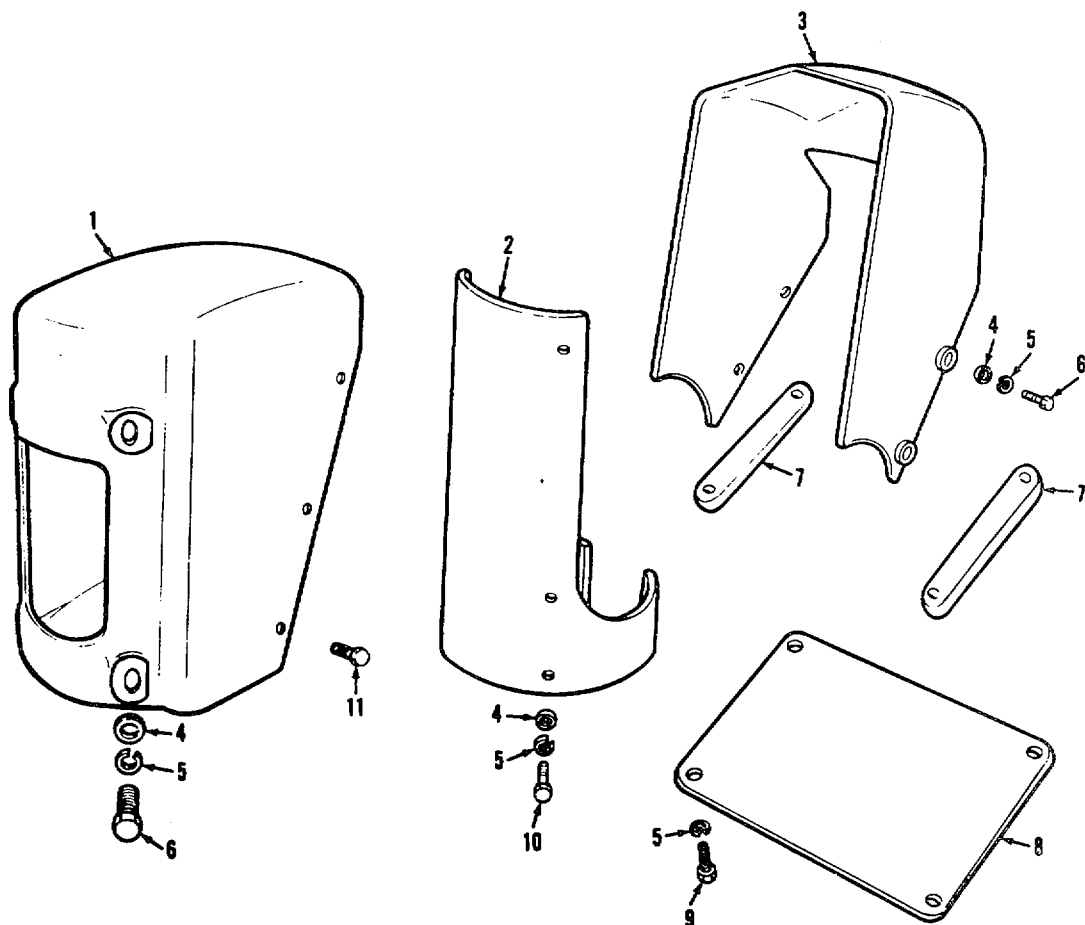
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
						GROUP: 200613 MOLDBOARD, TILT ARMS, AND RELATED PARTS (EARLY MODEL BULLDOZER)		
E-33	1	PAOZZ	3830-00-520-8385	7360940	19207	CABLE ASSEMBLY: MOLDBOARD MECHANICAL LIFTING	EA	2
E-33	2	PAOZZ	4030-00-243-4441	MS16842-8	96906	CLAMP, WIRE ROPE, SADDLED: MOLD- BOARD MECHANICAL LIFTING CABLE ASSEMBLY	EA	8
E-33	3	XAOZZ		8383372	19207	CABLE: MOLDBOARD MECHANICAL LIFTING CABLE ASSEMBLY	EA	2
E-33	4	PAOZZ	4710-00-240-9255	8383374	19207	TUBE, CABLE END: MOLDBOARD MECHANICAL LIFTING CABLE ASSEMBLY	EA	2
E-33	5	PAOZZ	2590-00-125-3836	10934326	19207	CLAMP ASSEMBLY: MOLDBOARD MECHANICAL LIFTING CABLE STOWAGE	EA	2
E-33	6	PAOZZ	2590-00-125-3832	10887470	19207	BLADE ASSEMBLY: BULLDOZER	EA	1
E-33	7	PAOZZ	2540-00-770-5174	7705174	19207	EDGE: BULLDOZER MOLDBOARD CUTTING	EA	1
E-33	8	PAOZZ	5310-00-842-7634	MS35692-109	96906	NUT, SLOTTED, HEXAGON: 1-1/2-12NF-3, MOLDBOARD TILT ARM PINS	EA	4
E-33	9	PAOZZ	5315-00-878-8209	MS24665-751	96906	PIN, COTTER: 3/8 x 2-1/2, MOLDBOARD TILT ARM PINS	EA	4
E-33	10	PAOZZ	2540-00-770-5186	7705186	19207	TILT ARM ASSEMBLY: OUTBOARD, LEFT AND RIGHT	EA	2
E-33	11	PAOZZ	5315-00-770-5177	7705177	19207	PIN, OUTBOARD TILT ARMS TO MOLD- BOARD	EA	2
E-33	12	PAOZZ	5305-00-725-4109	MS90726-163	96906	SCREW, CAP, HEXAGON HEAD: 5/8-18UNF-2A x 1-3/4, INBOARD TILT ARMS TO MOLDBOARD PINS	EA	2
E-33	13	PAOZZ	5310-00-800-0695	MS35335-39	96906	WASHER, LOCK: INBOARD TILT ARMS TO MOLDBOARD PINS	EA	2
E-33	14	PAOZZ	2590-00-889-6730	11637238	19207	LOCK: INBOARD TILT ARMS TO MOLD- BOARD PINS	EA	2
E-33	15	PAOZZ	5315-00-770-5175	7705175	19207	PIN, MOLDBOARD: LEFT AND RIGHT INBOARD TILT ARMS TO MOLDBOARD	EA	2
E-33	16	PAOZZ	2590-00-653-9534	8381774	19207	TILT ARM ASSEMBLY: INBOARD, RIGHT	EA	1
E-33	17	PAOZZ	5315-00-050-5529	729485	23040	PIN, STRAIGHT, HEADLESS: LEFT AND RIGHT INBOARD TILT ARMS TO BRACKET	EA	2
E-33	18	PAOZZ	2590-00-653-9533	8381773	19207	TILT ARM ASSEMBLY: INBOARD, LEFT	EA	1
E-33	19	PAOZZ		MS35690-1204	96906	NUT: CUTTING EDGE TO MOLDBOARD	EA	24
E-33	20	PAOZZ	5310-00-584-7888	MS35338-51	96906	WASHER, LOCK: CUTTING EDGE TO MOLDBOARD	EA	24
E-33	21	PAOZZ	5306-00-127-7239	MS35754-59	96906	BOLT, SQUARE NECK: CUTTING EDGE TO MOLDBOARD	EA	24



TA169942

Figure E-34. Moldboard carrying hooks, control handle, and related parts (early model bulldozer).

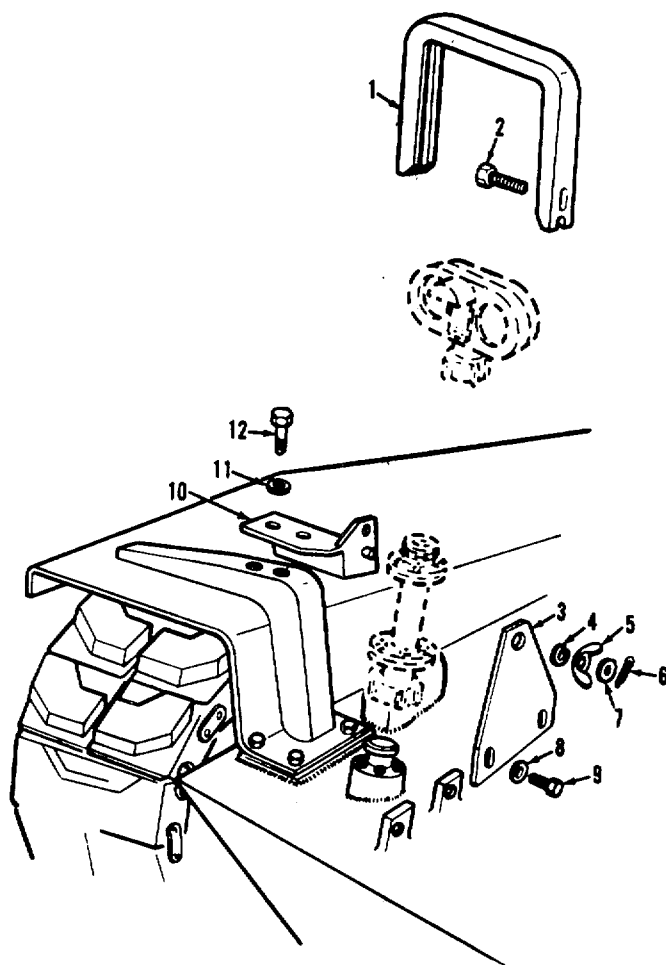
(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)(7) DESCRIPTION QTY	(8)	
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	USABLE ON CODE	U/M	INC IN UNIT
						GROUP: 200614 MOLDBOARD CARRYING HOOKS, CONTROL HANDLE, AND RELATED PARTS (EARLY MODEL BULLDOZER)		
E-34	1	PAOZZ	2590-00-858-6091	8709802	19207	HOOK: MOLDBOARD CARRYING	EA	2
E-34	2	PAOZZ	3040-00-606-2341	8710027	19207	SHAFT: TO RIGHT HAND CARRYING HOOK	EA	1
E-34	3	PAOZZ		8690231	19207	COUPLING: TO RIGHT HAND CARRYING HOOK	EA	2
E-34	4	PAOZZ	2590-00-401-4342	8710042	19207	SHAFT: TO RIGHT HAND CARRYING HOOK	EA	1
E-34	5	PAOZZ	5310-00-935-9021	MS51943-35	96906	NUT, SELF-LOCKING, HEXAGON: 3/8-16 UNC-3B, 11/16W, 35/64 THK COUPLING TO SHAFTS	EA	4
E-34	6	PAOZZ	5315-00-842-3154	MS35810-36	96906	PIN, STRAIGHT, HEADED: 1/2 IN. DIA SHANK, ROD END CLEVIS TO ARM	EA	1
E-34	7	PAOZZ	5340-00-200-6145	144245	21450	CLEVIS, ROD END: CARRYING HOOK CONTROL HANDLE	EA	1
E-34	8	PAOZZ	5310-00-834-8734	MS35691-37	96906	NUT, PLAIN, HEXAGON: 1/2-20-2B, JAM, ROD END CLEVIS	EA	1
E-34	9	PAOZZ	2590-00-418-0819	8744886	19207	SUPPORT: CARRYING HOOK CONTROL HANDLE	EA	1
E-34	10	PAOZZ	2590-00-493-9085	8744885	19207	HANDLE ASSEMBLY, MOLDBOARD CARRYING HOOKS CONTROL	EA	1
E-34	11	PAOZZ	5315-00-839-5821	MS24665-351	96906	PIN, COTTER: ROD END CLEVIS PIN	EA	1
E-34	12	PAOZZ	5315-00-616-5520	1MS35756-14	96906	KEY, WOODRUFF: 3/16 X 7/8, CONTROL ARM TO SHAFT	EA	1
E-34	13	PAOZZ	5305-00-054-9288	MS51955-74	96906	SETSCREW: 1/2-13UNC-2A x 1-3/4, CARRYING HOOKS TO SHAFTS	EA	2
E-34	14	PAOZZ	5310-00-834-8732	MS35691-33	96906	NUT, PLAIN, HEXAGON: 1/2-13UNC-2B, CARRYING HOOKS TO SHAFTS SET-SCREWS	EA	2
E-34	15	PAOZZ	3040-00-571-6831	8710023	19207	SHAFT: TO LEFT HAND CARRYING HOOK	EA	1
E-34	16	PAOZZ	3040-00-740-3981	8709801	19207	ARM: CARRYING HOOK CONTROL HANDLE TO SHAFT	EA	1
E-34	17	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER, LOCK: 1/2 IN. BOLT SIZE, CONTROL ARM TO SHAFT	EA	1
E-34	18	PAOZZ	5305-00-716-8128	MS90725-117	96906	SCREW, CAP, HEXAGON HEAD: 1/2-13 UNC-2A x 2-1/2, CONTROL ARM TO SHAFT	EA	1
E-34	19	PAOZZ	5305-00-269-3217	MS90725-67	96906	SCREW, CAP, HEXAGON HEAD: 3/8-16 UNC-2A x 2-1/4, COUPLINGS TO SHAFTS	EA	4



TA169943

Figure E-35. Cylinder guards (early model bulldozer).

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN UNIT
E-35	1	PAOZZ	2590-00-418-0777	7383742	19207	GROUP: 200615 CYLINDER GUARDS (EARLY MODEL BULLDOZER)	EA	1
E-35	1	PAOZZ	2590-00-418-0779	7383743	19207	GUARD: HYDRAULIC CYLINDER ASSEMBLY, LEFT	EA	1
E-35	2	PAOZZ	2590-00-125-3847	7383745	19207	GUARD: HYDRAULIC CYLINDER ASSEMBLY, RIGHT	EA	2
E-35	3	PAOZZ	2590-00-418-0787	7383746	19207	GUARD: HYDRAULIC CYLINDER ASSEMBLY, LEFT	EA	1
E-35	3	PAOZZ	2590-00-418-0802	7383747	19207	GUARD: HYDRAULIC CYLINDER ASSEMBLY, RIGHT	EA	1
E-35	4	PAOZZ	5310-00-809-3079	MS27183-19	96906	WASHER, FLAT: CYLINDER GUARDS	EA	24
E-35	5	PAOZZ	5310-00-584-5272	MS35338-48	96906	WASHER, LOCK: CYLINDER GUARDS	EA	32
E-35	6	PAOZZ	5305-00-042-6417	MS90725-113	96906	SCREW, CAP, HEXAGON HEAD: CYLINDER GUARDS	EA	16
E-35	7	PAOZZ	5365-00-409-8984	7953557	19207	SPACER: CYLINDER GUARDS	EA	4
E-35	8	PAOZZ	2590-00-405-0235	8744840	19207	GUARD: HYDRAULIC CYLINDER ASSEMBLY	EA	2
E-35	9	PAOZZ	5305-00-071-1770	MS90725-116	96906	SCREW, CAP, HEXAGON HEAD: CYLINDER GUARDS	EA	8
E-35	10	PAOZZ	5305-00-782-9495	MS90725-111	96906	SCREW, CAP, HEXAGON HEAD: CYLINDER GUARDS	EA	8
E-35	11	PAOZZ	5305-00-044-4153	MS90725-109	96906	SCREW, CAP, HEXAGON HEAD: CYLINDER GUARDS	EA	8



TA169944

Figure E-36. Headlamp brush guard (early model bulldozer).

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)	(8)
(a) FIG NO. UNIT	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	PART NUMBER	FSCM	DESCRIPTION USABLE ON CODE	U/M	QTY INC IN
						GROUP: 200616 HEADLAMP BRUSH GUARD (EARLY MODEL BULLDOZER)		
E-38	1	PAOZZ	2510-00-125-3805	10883780	19207	GUARD: HEADLAMP BRUSH GUARD	EA	2
E-36	2	PAOZZ	530-00-938-1643	10887246	19207	BOLT: GUARD TO SUPPORT	EA	4
E-36	3	PAOZZ	2510-00-152-2384	10883784	19207	SUPPORT: HEADLAMP BRUSH GUARD, RIGHT	EA	1
E-38	3	PAOZZ	2510-00-889-3369	10883783	19207	SUPPORT: HEADLAMP BRUSH GUARD, LEFT	EA	1
E-36	4	PAOZZ	5310-00-637-9541	MS3533S-46	96906	WASHER, LOCK: GUARD TO SUPPORT BOLT	EA	4
E-36	5	PAOZZ	5310-00-647-3934	7383581	19207	NUT, WING: GUARD TO SUPPORT BOLT	EA	4
E-36	6	PAOZZ	5315-00-816-1794	MS24865-285	96906	PIN, COTTER: GUARD TO SUPPORT BOLT	EA	4
E-36	7	PAOZZ	5310-00-080-6004	MS27183-14	96906	WASHER, FLAT: GUARD TO SUPPORT BOLT	EA	4
E-3B	8	PAOZZ	5310-00-809-3079	MS27183-19	98906	WASHER, FLAT: SUPPORT MOUNTING BOLT	EA	4
E-36	9	PAOZZ	5306-00-997-8189	MS35763-68	96906	BOLT, HEXAGON HEAD: SUPPORT MOUNTING	EA	4
E-36	10	PAOZZ		10883779	19207	SUPPORT: FENDER MOUNTED, RIGHT	EA	1
E-36	10	PAOZZ		10883778	19207	SUPPORT: FENDER MOUNTED, LEFT	EA	1
E-38	11	PAOZZ	5310-00-809-4061	MS27183-15	96906	WASHER, FLAT: FENDER MOUNTED SUPPORT	EA	4
E-36	12	PAOZZ	530B-00-145-0876	MS35768-33	96906	BOLT, HEXAGON HEAD: FENLER MOUNTED SUPPORT	EA	4

SECTION V.

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

NATIONAL STOCK NUMBER CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS

NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.,	NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.
5306-00-004-0764	E-13	11	5305-00-071-2069	E-17	9
5935-00-005-6455	E-02	14	5305-00-071-2069	E-18	6
5315-OC-006-9639	E-12	5	5305-00-071-2069	E-23	1
5315-OC-006-9640	E-12	7	5305-00-071-2070	E-15	6
5935-00-006-9844	E-01	24	5305-00-071-2070	E-16	23
5315-00-008-3175	E-13	19	5305-00-071-2072	E-15	7
5315-00-008-3176	E-12	6	5305-00-071-2072	E-17	14
531 5-00-008-3177	E-13	14	5305-00-071-2073	E-14	14
5310-00-016-6105	E-09	19	5305-00-071-2073	E-15	8
5305-00-022-3868	E-11	2	5305-00-071-2506	E-25	20
5305-00-022-8288	E-27	16	5305-00-071-2506	E-31	27
5925-00-026-4767	E-01	6	2590-00-079-8668	E-08	3
5305-00-042-6417	E-35	6	5310-00-080-6004	E-09	9
4710-00-043-5227	E-25	43	5310-00-080-6004	E-19	7
5305-00-044-4153	E-18	9	5310-00-080-6004	E-25	30
5305-00-044-4153	E-35	11	5310-00-080-6004	E-36	7
5310-00-045-3299	E-01	26	5310-00-081-4219	E-08	15
5310-00-045-4007	E-04	3	5310-00-081-4219	E-29	32
5310-00-045-4007	E-06	9	2590-00-087-4174	E-29	33
4730-00-045-9769	E-05	11	4730-00-090-9193	E-24	2
2590-OC-047-4096	E-02	4	2590-00-104-8872	E-15	10
2590-00-047-4096	E-27	13	5310-00-109-0786	E-01	12
5315-00-050-5529	E-33	17	3110-00-109-1179	E-06	13
5305-OC-051-4078	E-09	24	3110-00-114-5987	E-30	13
5340-00-053-8994	E-25	29	2590-00-115-4340	E-09	5
5305-00-054-9286	E-25	12	2590-00-115-4343	E-09	1
5305-00-054-9286	E-31	14	2590-00-115-4346	E-17	3
5305-00-054-9288	E-14	10	5340-00-119-3900	E-01	19
5305-00-054-9288	E-34	13	2510-00-125-3805	E-19	1
5315-00-059-0238	E-32	2	2510-00-125-3805	E-36	1
5305-00-068-0510	E-09	21	2590-00-125-3827	E-18	2
5305-00-068-0511	E-08	12	2590-00-125-3832	E-33	6
5305-00-068-0511	E-25	3	2590-00-125-3836	E-13	b
5305-00-068-0511	E-31	3	2590-00-125-3836	E-33	5
5305-00-068-051 4	E-01	3	2590-00-125-3845	E-14	7
5305-00-068-0515	E-01	38	2590-00-125-3845	E-25	8
5305-00-068-7837	E-01	11	2590-00-125-3847	E-35	2
5305-00-071-1770	E-35	9	5306-00-127-7239	E-33	21
5305-00-071-2067	E-15	14	5340-00-135-6574	E-01	35
5315-00-071-2067	E-15	19	5340-00-136-4763	E-01	36
5305-00-071-2067	E-16	14	5315-00-140-1938	E-14	3
5305-00-07,1-2067	E-23	8	5303-00-143-7002	E-01	18
5305-00-071-2068	E-18	&	5340-00-144-6093	E-07	7
5305-00-071-2069	E-15	1	5306-00-145-0876	E-36	12
5305-00-071-2069	E-16	18	5306-00-145-5076	E-19	12

**NATIONAL STOCK NUMBER CROSS-REFERENCE TO FIGURE AND ITEM
NUMBERS-CONTINUED**

NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.,	NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.
5315-00-150-3674	E-10	21	2590-00-235-4363	E-08	7
2510-00-152-2384	E-19	3	5315-00-236-8365	E-29	22
2510-00-152-2384	E-36	3	4710-00-240-9255	E-13	5
6145-00-152-6499	E-02	17	4710-00-240-9255	E-33	4
2520-00-167-9182	E-22	16	4030-00-243-4441	E-13	3
2590-00-177-8319	E-17	1	4030-00-243-4441	E-33	2
2590-00-177-9267	E-18	3	2520-00-245-1164	E-06	5
2590-00-177-9268	E-18	3	5315-00-256-4791	E-06	1
2520-00-178-0465	E-05	14	5305-00-257-6242	E-22	19
2520-00-178-0466	E-05	12	5310-00-262-3548	E-08	17
5365-00-178-3740	E-07	2	6240-00-266-9940	E-01	16
2590-00-179-3536	E-00	4	5305-00-267-8954	E-01	30
5120-00-179-5667	E-26	3	5305-00-267-8972	E-29	13
6220-00-179-8976	E-27	4	5305-00-267-8974	E-27	2
9390-00-180-7289	E-27	17	5305-00-269-3212	E-10	19
5330-00-185-9928	E-22	21	5305-00-269-3214	E-11	9
5330-00-194-3726	E-04	5	5305-00-269-3217	E-34	19
5310-00-194-9211	E-30	8	5305-00-269-3241	E-29	16
5310-00-197-4508	E-01	20	5310-00-269-3465	E-01	37
2510-00-198-7552	E-01	39	5305-00-269-4511	E-05	16
5340-00-200-4185	E-30	4	5305-00-269-4511	E-08	32
5340-00-200-6145	E-34	7	5305-00-269-4511	E-30	12
4730-00-203-0030	E-24	22	3110-00-275-0068	E-21	5
5310-00-209-0965	E-07	15	5365-00-275-6104	E-04	10
5935-00-214-0904	E-01	22	3110-00-277-0423	E-30	15
4730-00-221-2137	E-04	27	2590-00-279-8174	E-13	13
4730-00-221-2137	E-05	1	2590-00-280-2150	E-13	18
2590-00-221-4833	E-09	15	2590-00-280-2152	E-12	1
3040-00-221-9382	E-22	5	5315-00-282-6887	E-03	3
4320-00-222-8867	E-21	1	4730-00-289-5176	E-31	21
5305-00-225-3844	E-25	40	2590-00-295-7784	E-13	20
5310-00-225-6993	E-16	22	2590-00-295-9990	E-13	3
5306-00-225-8499	E-04	17	5930-00-296-6318	E-01	4
5305-00-225-8499	E-29	25	5330-00-297-6329	E-01	17
5303-00-225-8500	E-30	1	5330-00-297-7092	E-27	7
5306-00-225-8502	E-29	28	5330-00-297-9990	E-10	15
3505-00-225-9081	E-05	10	5330-00-297-9990	E-23	4
5306-00-226-4827	E-09	2	6210-00-299-5564	E-01	15
5306-00-226-4827	E-09	24	5315-00-316-0884	E-32	6
5306-00-226-4828	E-05	7	4730-00-329-7098	E-21	11
2520-00-230-3611	E-04	15	2590-00-351-2906	E-29	10
2520-00-230-3612	E-04	1	3830-00-377-4802	E-21	7
2520-00-230-3613	E-07	17	2590-00-400-7076	E-08	33
3040-00-231-7469	E-13	17	2590-00-401-4342	E-34	4
2540-00-231-7483	E-27	6	2590-00-403-4815	E-30	5
5310-00-231-7665	E-10	8	2590-00-403-9452	E-24	14
5310-00-232-0560	E-07	13	2590-00-403-9453	E-16	6
2520-00-232-6036	E-07	8	5340-00-403-9454	E-24	12

NATIONAL STOCK NUMBER CROSS-REFERENCE TO FIGURE AND ITEM
NUMBERS-CONTINUED

NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.,	NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.
2590-00-405-0235	E-35	8	3630-00-520-8385	E-13	2
2590-00-407-6763	E-11	3	3830-00-520-8385	E-33	1
5310-00-407-9566	E-04	16	3010-00-540-5869	E-28	8
5310-00-407-9566	E-05	8	5330-00-542-0981	E-04	20
5310-00-407-9566	E-08	14	5330-00-542-0981	E-05	4
5310-00-407-9566	E-09	3	4730-00-542-4569	E-10	9
5310-00-407-9566	E-29	26	5305-00-543-2419	E-08	8
5310-00-407-9566	E-30	2	5320-00-543-3085	E-02	10
4730-00-409-8933	E-10	12	5310-00-550-1130	E-01	2
5365-00-409-8984	E-35	7	5340-00-550-8070	E-14	4
2590-00-410-5767	E-10	22	2590-00-552-3933	E-23	10
2590-00-410-5768	E-15	15	2590-00-552-3955	E-23	7
2590-00-410-5769	E-23	3	3110-00-555-7227	E-04	9
2590-00-414-6424	E-01	7	5310-00-559-0070	E-01	29
3130-00-417-2556	E-04	24	5310-00-562-0133	E-22	4
6220-00-417-2717	E-27	8	3040-00-571-6831	E-34	15
2590-00-417-2753	E-09	4	5305-00-579-2139	E-06	10
5340-OC-417-2822	E-05	21	5330-00-579-3156	E-29	6
2590-OC-418-0777	E-18	1	5330-00-579-7927	E-10	14
2590-00-418-0777	E-35	1	5330-00-579-7927	E-23	12
2590-00-418-0779	E-18	1	5310-00-582-5965	E-01	31
2590-00-418-0779	E-35	1	5310-00-582-5965	E-25	18
2590-00-418-0787	E-35	3	5310-00-582-5965	E-25	41
2590-00-418-0802	E-35	3	5310-00-582-5965	E-27	9
2590-00-418-0819	E-34	9	5310-00-582-5965	E-29	15
2520-00-418-4943	E-21	9	5310-00-582-5965	E-31	25
4710-00-435-7710	E-17	2	5310-00-584-5272	E-07	10
3040-00-441-8799	E-09	20	5310-00-584-5272	E-09	23
5340-00-442-6051	E-01	34	5310-00-584-5272	E-10	16
4730-00-451-6098	E-25	46	5310-00-584-5272	E-14	13
5306-00-463-3883	E-25	23	5310-00-584-5272	E-15	2
5306-00-463-3883	E-31	19	5310-00-584-5272	E-5	13
4710-00-477-3721	E-24	17	5310-00-584-5272	E-15	18
5306-00-481-3669	E-25	24	5310-00-584-5272	E-16	7
5306-00-481-3669	E-31	20	5310-00-584-5272	E-17	10
2590-00-484-0787	E-22	18	5310-00-584-5272	E-18	5
5999-00-485-8954	E-02	2	5310-00-584-5272	E-23	2
5999-00-485-8954	E-27	11	5310-00-584-5272	E-23	11
5999-00-485-8955	E-02	13	5310-00-584-5272	E-24	11
5999-00-485-8955	E-27	22	5310-00-584-5272	E-34	17
2590-00-491-6864	E-01	10	5310-00-584-5272	E-35	5
2590-00-493-9010	E-01	5	5340-00-584-6469	E-29	3
2590-00-493-9046	E-01	9	5310-00-584-7888	E-13	10
2590-00-493-9085	E-34	10	5310-00-584-7888	E-16	2
2590-00-494-9517	E-17	5	5310-00-584-7888	E-25	27
2590-00-494-9518	E-17		5310-00-584-7888	E-31	23
1650-00-497-7296	E-25		5310-00-584-7888	E-33	20
5310-00-518-7720	E-05		5310-00-584-7889	E-11	1

NATIONAL STOCK NUMBER CROSS-REFERENCE TO FIGURE AND ITEM
NUMBERS-CONTINUED

NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.,	NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.
5330-00-585-8247	E-17	7	5330-00-653-9545	E-04	14
5975-0C-588-0387	E-01	21	5330-00-653-9546	E-05	9
3805-00-588-1163	E-21	13	5330-00-653-9546	E-30	3
3805-00-588-1164	E-21	3	2590-00-656-3614	E-25	4
5365-00-588-1184	E-21	8	2590-00-656-3614	E-31	6
5330-00-601-4932	E-25	15	5340-00-670-7614	E-30	6
3040-00-606-2341	E-34	2	2590-00-678-7853	E-29	29
5841-00-608-9087	E-10	13	2510-00-689-3369	E-19	3
5315-00-616-5514	E-09	12	2510-00-689-3369	E-36	3
5315-00-616-5520	E-14	9	5307-00-691-6833	E-05	17
5315-00-616-5520	E-34	12	2920-00-695-6223	E-02	15
5310-00-637-9541	E-05	15	2920-00-695-6223	E-27	20
5310-00-637-9541	E-08	27	6210-00-699-9457	E-01	14
5310-00-637-9541	E-09	8	2520-00-700-5921	E-17	6
5310-00-637-9541	E-10	18	5330-00-701-4010	E-03	4.
5310-00-637-9541	E-11	8	2590-00-707-1226	E-28	5
5310-00-637-9541	E-19	4	2590-00-707-1227	E-28	3
5610-00-637-9541	E-25	2	2590-00-707-1230	E-28	9
5310-00-637-9541	E-25	31	2590-00-707-1231	E-28	10
5310-00-637-9541	E-29	12	2590-00-707-1232	E-28	6
5310-00-637-9541	E-30	11	2540-00-707-1242	E-21	12
5310-00-637-9541	E-31	2	2590-00-707-1247	E-21	6
5310-00-637-9541	E-36	4	5330-00-707-8823	E-04	7
5340-00-647-3933	E-02	12	5315-00-708-2934	E-28	4
5340-00-647-3933	E-27	15	5315-00-708-2935	E-28	2
5310-00-647-3934	E-19	5	5365-00-708-2936	E-21	2
5310-00-647-3934	E-36	5	6220-00-709-1836	E-27	14
6220-00-647-3935	E-27	1	5305-00-709-8526	E-07	14
2520-00-653-9211	E-04	11	5305-00-716-8128	E-34	18
2520-00-653-9212	E-04	4	5305-00-716-8156	E-10	17
2520-00-653-9213	E-07	6	5305-00-719-5219	E-24	9
2520-00-653-9215	E-04	6	5305-00-719-5235	E-07	9
2520-00-653-9216	E-28	1	5305-00-719-5235	E-25	16
2520-00-653-9217	E-30	14	5305-00-719-5235	E-31	18
2520-00-653-9218	E-30	1.0	5305-00-719-5238	E-07	12
2520-00-653-9220	E-07	4	5305-00-721-5492	E-25	32
2520-00-653-92'21	E-30	18	5305-00-724-7223	E-10	26
2590-00-653-9532	E-32	1	5305-00-725-4109	E-32	9
2590-00-653-9533	E-33	18	5305-00-725-4109	E-33	12
2590-00-653-9534	E-33	16	5330-00-726-1470	E-22	7
3020-00-653-9535	E-07	5	2590-00-726-1585	E-22	21
4730-00-653-9537	E-04	19	2520-00-726-1633	E-22	1
4730-00-653-9537	E-05	3	2520-00-726-1634	E-22	1
5310-00-653-9539	E-30	17	2520-00-726-1641	E-22	28
5306-00-653-9540	E-29	19	2590-00-726-1644	E-22	6
5310-00-653-9542	E-30	16	2520-00-726-1645	E-22	12
5330-00-653-9543	E-07	1	5305-00-726-2543	E-1 2	2
5330-00-653-9544	E-05	5	5305-00-726-254 3	E-1 3	1 5

**NATIONAL STOCK NUMBER CROSS-REFERENCE TO FIGURE AND ITEM
NUMBERS-CONTINUED**

NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.,	NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.
5305-00-726-2555	E-22	26	5330-00-804-5695	E-25	38
5305-00-726-2556	E-03	6	2590-00-806-1126	E-29	18
5310-00-728-2038	E-11	6	25Y90-00-806-1127	E-25	9
5305-00-732-0511	E-16	8	2590-00-806-1127	E-31	11
5310-0C-732-0559	E-05	18	2590-00-806-1128	E-10	4
5306-00-732-3289	E-32	4	2590-00-806-1130	E-16	11
3120-00-732-3548	E-22	17	2590-00-806-1130	E-24	19
2520-00-732-3827	E-32	7	2590-00-806-1131	E-23	5
2590-00-735-6793	E-10	1 C	2590-00-806-1132	E-23	9
5340-00-738-4968	E-29	17	4720-00-806-1133	E-16	9
.2590-00-740-3981	E-14	12	4720-00-806-1142	E-24	21
3040-00-740-3981	E-34	16	4720-00-806-1145	E-24	20
9905-00-752-4649	E-02	18	2590-00-806-1146	E-24	27
5310-00-754-2005	E-24	5	2590-00-806-1147	E-24	18
2590-00-760-5828	E-29	27	2590-00-806-1148	E-25	7
2590-00-760-5834	E-09	17	2590-00-806-1148	E-31	9
5310-00-761-6882	E-01	13	2590-00-806-1157	E-10	3
5310-00-763-8894	E-16	3	4710-00-806-1171	E-10	5
5310-00-763-8894	E-25	28	2940-00-806-1173	E-25	21
5310-00-763-8894	E-31	24	2940-00-806-1173	E-31	28
5310-00-763-8905	E-05	22	2590-00-806-1174	E-25	5
5310-00-763-8921	E-13	9	2590-00-806-1174	E-31	7
5310-00-768-0018	E-16	12	2590-00-806-1175	E-11	10
5310-00-768-0318	E-17	12	2590-00-806-1178	E-08	10
5310-00-768-0319	E-01	33	2590-00-806-1180	E-08	30
5310-00-768-0319	E-27	1C	2590-00-806-1183	E-08	25
2540-00-770-5174	E-13	8	3720-00-806-1184	E-24	24
2540-00-770-5174	E-33	7	2590-00-806-1185	E-24	30
5315-00-770-5175	E-33	15	4730-00-807-2886	E-31	4
'5315-00-770-5177	E-33	11	5330-00-807-8993	E-23	6
2540-00-770-5186	E-33	10	4730-00-809-1452	E-16	10
2520-00-770-5560	E-22	22	5310-00-809-3079	E-15	4
5935-00-771-8192	E-02	3	5310-00-809-3079	E-16	13
5935-00-771-8192	E-27	12	5310-00-809-3079	E-18	4
5935-00-772-0499	E-06	7	5310-00-809-3079	E-19	8
6145-00-772-0583	E-27	18	5310-00-809-3079	E-35	4
5340-00-772-2322	E-02	16	5310-00-809-3079	E-36	8
5340-00-772-2322	E-27	19	5310-00-809-4058	E-25	19
5305-00-782-9489	E-17	4	5310-00-809-4058	E-25	42
5305-00-782-9495	E-35	10	5310-00-809-4058	E-27	3
5310-00-785-1762	E-09	7	5310-0C-809-4058	E-31	26
5310-00-797-2040	E-02	8	5310-00-809-4061	E-09	22
5310-00-797-2040	E-27	5	5310-00-809-4061	E-19	11
5310-00-800-0695	E-12	3	5310-00-809-4061	E-19	12
5310-00-800-0695	E-13	16	5310-00-809-4061	E-36	11
5310-00-800-0695	E-32	8,	5310-00-809-4085	E-07	16
5310-00-800-0695	E-33	13	5310-00-809-4085	E-29	9
5365-00-803-7304	E-04	23	5310-00-809-5998	E-07	11

**NATIONAL STOCK NUMBER CROSS-REFERENCE TO FIGURE AND ITEM
NUMBERS-CONTINUED**

NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.,	NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.
5310-00-809-5998	E-09	18	2590-00-884-1979	E-29	4
5310-00-809-5998	E-15	3	2590-00-889-1888	E-29	1
5310-00-809-5998	E-18	7	2590-00-889-6730	E-12	4
5310-0C-809-5998	E-24	10	2590-00-889-6730	E-13	12
5310-00-809-8533	E-16	1	2590-00-889-6730	E-33	14
531 5.00-816-1794	E-19	6	5310-00-891-1797	E-29	2
531 500-816-1794	E-36	6	5306-00-891-7876	E-08	29
5310-00-820-6653	E-10	25	5315-00-891-7878	E-08	19
5310-00-822-1179	E-29	8	2590-00-898-6091	E-14	1
5310-00-823-8803	E-10	23	4730-00-900-1132	E-24	25
531 5-00-826-4368	E-02	5	2590-00-900-8485	E-29	5
5315-00-826-4370	E-02	7	5330-00-900-8486	E-29	7
4730-00-826-6465	E-04	18	4730-00-900-8487	E-16	25
4730-00-826-6465	E-05	2	4730-00-900-8663	E-24	28
2590-00-827-8484	E-13	21	3110-00-902-1657	E-04	12
5310-00-830-9803	E-25	47	5330-00-902-8483	E-05	6
5935-00-833-8561	E-01	23	5365-00-903-6668	E-06	2
5310-00-834-8732	E-14	11	5305-00-904-4006	E-24	6
5310-00-834-8732	E-34	14	2590-00-907-8969	E-22	1
5310-00-834-8734	E-14	5	2590-00-907-8970	E-22	1
5310-0C-834-8734	E-34	8	2520-00-907-8971	E-06	1
5310-00-837-7788	E-10	7	5120-00-907-9001	E-26	1
2590-00-837-8847	E-09	10	5330-00-907-9002	E-05	13
2590-00-837-8849	E-09	11	2520-00-907-9003	E-06	14
2590-00-837-8855	E-09	13	5330-00-907-9004	E-05	20
5310-00-839-2066	E-25	34	2540-00-911-3598	E-14	2
5315-00-839-5820	E-29	30	3110-00-912-6271	E-06	4
5315-00-839-5821	E-34	11	2530-00-921-5020	E-03	5
531 5-00-839-5822	E-08	20	5305-00-926-5671	E-08	1
5315-00-839-5822	E-10	20	5310-00-931-3175	E-29	20
5315-00-839-5822	E-14	8	2590-00-932-3495	E-19	10
5315-00-842-3154	E-34	6	2590-00-932-3496	E-19	10
5310-00-842-7634	E-32	3	2590-00-932-3569	E-08	11
5310-00-842-7634	E-33	8	2590-00-932-5009	E-10	1
5310-00-842-7652	E-22	3	2590-00-934-8256	E-08	16
5315-00-845-4232	E-29	24	2590-00-934-8298	E-08	9
5315-00-846-0126	E-22	14	5310-00-934-9757	E-01	27
5310-00-849-6883	E-29	31	5310-00-935-9021	E-34	5
2590-00-851-4865	E-09	16	2590-00-936-5291	E-08	31
5305-00-855-0957	E-13	22	5306-00-936-8302	E-08	26
2590-00-858-6091	E-34	1	2590-00-937-1957	E-08	18
5330-00-862-2681	E-21	10	2590-00-937-1960'	E-08	28
2590-00-862-2682	E-28	7	5306-00-938-1643	E-19	2
5340-00-865-9496	E-29	23	5306-00-938-1643	E-36	2
5315-00-878-8209	E-33	9	2590-00-938-8178	E-08	5
5310-00-880-7744	E-09	6	5330-00-939-0666	E-06	6
5310-00-880-7746	E-05	19	5305-00-939-1177	E-22	19
53f1-00-880-7746	E-08	13	5330-00-951-2492	E-22	13

**NATIONAL STOCK NUMBER CROSS-REFERENCE TO FIGURE AND ITEM
NUMBERS-CONTINUED**

NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.,	NATIONAL STOCK NUMBER	FIG NO.	ITEM NO.
5310-00-951-7209	E-25	26	5310-01-037-5360	E-10	24
5310-00-951-7209	E-31	22	5365-01-037-5393		32
5305-00-958-4354	E-04	2	5935-01-037-5395	E-02	1
5305-00-958-5247	E-30	9	5310-01-037-5397	E-05	12
5310-00-959-4675	E-08	2	5310-01-037-5397	E-15	17
5330-00-965-0753	E-22	20	3040-01-037-5414	E-11	4
5310-00-971-7989	E-29	21	5340-01-037-5420	E-03	7
5310-00-975-2075	E-08	6	5365-01-037-5424	E-16	16
5310-00-975-2075	E-08	23	5340-01-037-5430	E-16	24
5310-00-975-2075	E-09	14	5340-01-037-5431	E-25	25
5305-00-984-4977	E-02	11	5310-01-037-5431	E-31	29
5305-00-984-6193	E-01	28	5340-01-037-6825	E-16	15
5305-00-984-6194	E-01	25	4730-01-041-3371	E-25	45
5340-00-984-8540	E-29	11	5340-01-041-3374	E-25	35
5305-00-988-1724	E-20	2	4710-01-043-5226	E-17	8
5320-00-994-7076	E-27	21	4710-01-043-5232	E-24	16
5306-00-997-6189	E-19	9	5340-01-043-8016	E-25	36-
5306-00-997-6189	E-36	9	2590-01-043-8115	E-03	1
6220-01-K60-2687	E-02	6	4710-01-044-8398	E-24	15
2520-01-K60-4296	E-30	7	4730-01-045-2687	E-24	23
4730-01-K80-2999	E-04	26	4720-01-048-9355	E-25	33
4700-01-K80-2999	E-25	17	4710-01-052-0736	E-25	10
4730-01-K80-6797	E-24	1	5340-01-061-7330	E-20	1
3110-01-007-0193	E-04	22	4730-01-063-5925	E-24	29
4730-01-035-3164	E-25	37	2590-01-065-7200	E-11	3
4730-01-035-7544	E-25	44	2590-01-068-4046	E-17	13
5340-01-037-5251	E-01	1	5305-01-078-5975	E-11	5
2520-01-037-5252	E-25	11	5306-01-078-9418	E-16	17
2520-01-037-5252	E-31	13			

PART NUMBER CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS

PART NUMBER	FSCM	FIG NO,	ITEM NO.	PART NUMBER	FSCM	FIG NO.	ITEM NO.
AN122733	88044	E-03	3	MS27183-18	96906	E-18	7
AN6240-1	88044	E-25	39	MS27183-18	96906	E-24	10
JWP42-159	03032	E-27	16	MS27183-19	96906	E-15	4
MILC13486	81349	E-27	18	MS27183-19	96906	E-16	13
MS16146-2	96906	E-26	2	MS27183-19	96906	E-18	4
MS16626-4196	96906	E-02	9	MS27183-19	96906	E-19	8
MS16842-8	96906	E-13	3	MS27183-19	96906	E-35	4
MS16842-8	96906	E-33	2	MS27183-19	96906	E-36	8
MS20066-255	96906	E-06	11	MS27183-21	96906	E-10	23
MS20613-3P4	96906	E-27	21	MS27183-22	96906	E-16	1
MS20913-2S	96906	E-04	27	MS27183-22	96906	E-25	26
MS20913-2S	96906	E-05	1	MS27183-22	96906	E-31	22
MS20995N32-8	96906	E-06	8	MS28762-6-0740	96906	E-25	33
MS21262-68	96906	E-22	19	MS28775-116	96906	E-29	6
MS21333-102	96906	E-29	11	MS28775-222	96906	E-10	15
MS21333-126	96906	E-25	29	MS28775-222	96906	E-23	4
MS24649-46	96906	E-13	22	MS26775-225	96906	E-10	14
MS24665-132	96906	E-29	,22	MS28775-225	96906	E-23	12
MS24665-134	96906	E-29	30	MS26775-228	96906	E-23	6
MS24665-285	96906	E-19	6	MS28775-232	96906	E-17	7
MS24665-285	96906	E-36	6	MS28775-235	96906	E-04	5
MS24665-351	96906	E-34	11	MS28775-442	96906	E-22	13
MS24665-353	96966	E-08	20	MS28778-6	96906	E-25	38
MS24665-353	96906	E-10	20	MS35190-291	96906	E-30	9
MS24665-353	96906	E-14	8	MS35206-245	96906	E-01	28
MS24665-628	96906	E-22	14	MS35206-247	96906	E-01	25
MS24665-751	96906	E-33	9	MS35206-280	96906	E-20	2
MS24665-753	96906	E-32	2	MS35207-230	96906	E-04	2
MS25231-1829	96906	E-01	16	MS35265-30	96906	E-06	10
MS27130S38	96906	E-01	37	MS35333-38	96906	E-01	29
MS27183-10	96906	E-25	19	MS35333-40	96906	E-01	2
MS27183-10	96906	E-25	42	MS35335-33	96906	E-01	12
MS27183-10	96906	E-27	3	MS35335-39	96906	E-12	3
MS27183-10	96906	E-31	26	MS35335-39	96906	E-13	16
MS27183-12	96906	E-08	15	MS35335-39	96906	E-32	8
MS27183-12	96906	E-29	32	MS35335-39	96906	E-33	13
MS27183-14	96906	E-09	9	MS35336-27	96906	E-30	8
MS27183-14	96906	E-19	7	MS35338-31	96906	E-22	27
MS27183-14	96906	E-25	30	MS35338-41	9u906	E-04	3
MS27183-14	96906	E-36	7	MS35338-41	96906	E-06	9
MS27183-15	96906	E-09	22	MS35338-42	96906	E-01	26
MS27183-15	96906	E-19	11	MS35338-44	96906	E-01	31
MS27183-15	96906	E-19	12	MS35338-44	96906	E-25	18
MS27183-15	96906	E-36	11	MS35338-44	96906	E-25	41
MS27183-16	96906	E-07	16	MS35338-44	96906	E-27	9
MS27183-16	96906	E-29	9	MS35338-44	96906	E-29	15
MS27183-18	96906	E-07	11	MS35338-44	96906	E-31	25
MS27183-18	96906	E-09	18	MS35338-45	96906	E-04	16
MS27183-18	96906	E-15	3	MS35338-45	96906	E-05	8

PART NUMBER CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG NO,	ITEM NO.	PART NUMBER	FSCM	FIG NO.	ITEM NO.
MS35338-45	96906	E-08	14	MS35691-10	96906	E-29	20
MS35338-45	96906	E-09	3	MS35691-21	96906	E-08	6
MS35338-45	96906	E-29	26	MS35691-21	96906	E-08	23
MS35338-45	96906	E-30	2	MS35691o21	96906	E-09	14
MS35338-46	96906	E-05	15	MS35691-30	96906	E-29	2
MS35338-46	96906	E-U8	27	MS35691-33	96906	E-14	11
MS35338-46	96906	E-09	8	MS35691-33	96906	E-34	1 4
MS35338-46	96906	E-10	18	MS35691-37	96906	E-14	5
MS35338-46	96906	E-11	8	MS35691-37	96906	E-34	8
MS35338-46	96906	E-19	4	MS35691-428	96906	E-29	8
MS35338-46	96906	E-25	2	MS35691-45	96906	E-25	34
MS35338-46	96906	E-25	31	MS35691-5	96906	E-29	21
MS35338-46	9690o	E-29	12	MS35692-109	96906	E-32	3
MS35338-46	96906	E-30	11	MS35692-109	96906	E-33	8
MS35338-46	96906	E-31	2	MS35692-110	96906	E-22'	3
MS35338-46	96906	E-36	4	MS35692-13	96906	E-29	31
MS35338-47	96906	E-07	15	MS35743-001	96906	E-02	10
MS35338-48	96906	E-07	10	MS35754-59	96906	E-33	21
MS35338-48	96906	E-09	23	MS35756-14	96906	E-14	9
MS35338-48	96906	E-10	16	MS35756-14	96906	E-34	12
MS35338-48	96906	E-14	13	MS35756-6	96906	E-09	12
MS35338-48	96906	E-15	2	MS35763-68	96906	E-36	9
MS35338-48	96906	E-15	13	MS35763-833	96906	E-19	12
MS35338-48	96906	E-15	18	MS35763-837	96906	E-19	12
MS35338-48	96906	E-10	7	MS35763-868	96906	E-19	9
MS35338-48	96906	E-17	10	MS35768-33	96906	E-36	12
MS35338-48	96906	E-18	5	MS35769-18	96906	E-04	20
MS35338-48	96906	E-23	2	MS35769-18	96906	E-05	4
MS35338-48	96906	E-23	11	MS35810-32	96906	E-29	24
MS35338-48	96906	E-24	11	MS35810-36	96906	E34	6
MS35338-48	96906	E-34	17	MS35810-6	96906	E-14	3
MS35338-48	96906	E-35	5	MS35812-11	96906	E-14	4
MS35338-50	96906	E-05	23	MS3581-2	96906	E-29	23
MS35338-50	96906	E-10	25	MS39061-1	96906	E-01	4
MS35338-51	96906	E-13	10	MS39086-159	96906	E-O4	25
MS35338-51	96906	E-16	2	MS49005-8	96906	E-31	21
MS35338-51	96906	E-25	27	MS49006-6	96906	E-05	11
MS35338-51	96906	E-31	23	MS51096-415	96906	E-22	19
MS35338-51	96906	E-33	20	MS51812-25	96906	E-25	37
MS35338-52	96906	E-24	5	MS51815-37	96906	E-25	46
MS35338-53	96906	E-11	1	MS51819-37	96906	E-25	44
MS35340-46	96906	E-08	2	MS51884-7C	96906	E-25	17
MS35649-282	96906	E-01	27	MS51922-33	96906	E-16	22
MS35670-2	96906	E-04	18	MS51943-35	96906	E-34	5
MS35670-2	96906	E-05	2	MS51953-172	96906	E-25	12
MS35677-2	96906	E-02	7	MS51953-72	96906	E-31	14
MS35677-4	96906	E-02	5	MS51955-74	96906	E-14	10
MS35690-1204	96906	E-33	19	MS51955-74	96906	E-34	13

PART NUMBER CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG NO,	ITEM NO.	PART NUMBER	FSCM	FIG NO.	ITEM NO.
10873955	19207	E-24	8	10883778	19207	E-36	10
10873961	19207	E-24	3	10883779	19207	E-36	10
10873964	192,07	E-04	15	10883780	19207	E-19	1
10883600	19207	E-25	25	10883780	19207	E-36	1
10883600	19207	E-31	29	10683783	19207	E-19	3
10883624	19207	E-25	7	10883783	19207	E-36	3
10883624	19207	E-31	9	10883784	19207	E-19	3
10883625	19207	E-25	6	10883784	19207	E-36e	3
10883625	19207	E-31	8	10883785	19207	E-16	4
10883626	19207	E-11	3	10663786	19207	E-25	10tO
10883627	19207	E-11	3	10883786	19207	E-31	12
10883628	19207	E-31	1	10883789	19207	E-16	24
10883645	19207	E-24	7	10883802.	19207	E-17	2
10883650	19207	E-25	24	10883803	19207	E-17	1
10883650	19207	E-31	20	10883821	19207	E-15	5
10883657	19207	E-17	6	10883823	19207	E-17	13
10883658	19207	E-17	3	10883825	19207	E-24	15
10883659	19207	E-17	5	10883827	19207	E-17	8
10883660	19207	E-17	11	10883885	19207	E-10	21
10883663	19207	E-25	13	10883886	19207	E-24	17
10883663	19207	E-31	15	10883887	19207	E-24	16
10883667	19207	E-14	6	10883910	19207	E-10	11
10883671	19207	E-25	11	10883915	19207	E-10	22
10883671	19207	E-31	13	10884065	19207	E-15	9
10883672	19207	E-29	5	10884066	19207	E-15	9
10883674	19207	E-10	2	10884126	19207	E-15	16
10883675	19207	E-29	7	10884143	19207	E-15	11
10883676	19207	E-29	4	10884145	19207	E-15	15
10883696	19207	E-14	7	10884146	19207	E-15	10
10883697	19207	E-31	16	10864156	19207	E-15	12
10883698	19207	E-25	8	10884156	19207	E-15	17
10883698	19207	E-31	10	10884179	19207	E-08	11
10883716	19207	E-10	3	10884184	19207	E-08	7
10883719	19207	E-10	5	10884185	19207	E-09	11
10883720	19207	E-25	21	10884187	19207	E-08	10
10883720	19207	E-31	28	10884196	19207	E-08	4
10883747	19207	E-10	1	10884198	19207	E-08	31
10883760	19207	E-25	5	10884201	19207	E-16	17
10883760	19207	E-31	7	10884203	19207	E-16	16
10883761	19207	E-18	3	10884205	19207	E-16	15
10883762	19207	E-18	3	10884206	19207	E-08	30
10883763	19207	E-25	23	10884207	19207	E-08	3
10863763	19207	E-31	19	10884212	19207	E-08	22
10883768	19207	E-16	6	10884217	19207	E-08	25
10883769	19207	E-16	5	10884243	19207	E-08	33
10883772	19207	E-11	10	10884301	19207	E-13	21
10883773	19207	E-29	14	10884493	19207	E-16	70
10883774	19207	E-16	21	10884494	19207	E-16	19

PART NUMBER CROSS-REFERENCE .TO FIGURE AND ITEM NUMSERS-CONTINUEO

PART NUMBER	FSCM	FIG NO,	ITEM NO.	PART NUMBER	FSCM	FIG NO.	ITEM NO.
MS51967-14	96906	E-16	12	MS9U727-169	96906	E-03	6
MS51967-14	96906	E-17	12	MS90727-206	96906	E-24	4
MS51967-2	96906	E-01	13	MS90727-215	96906	E-24	6
MS51967-23	96906	E-13	9	MS90727-216	96906	E-00	1
MS51967-5	96906	E-09	6	MS90727-36	96906	E-09	24
MS51968-12	96906	E-27	10	MS90727-65	96906	E-29	16
MS51968-14	96906	E-07	13	MS90727-7	96906	E-01	3
MS51968-14	96906	E-09	19	MS90727-8	96906	E-01	38
MS51968-2	96906	E-01	33	MS90727-92	96906	E-07	14
MS51968-20	96906	E-05	22	MS9U0728-110	96906	E-16	8
MS51968-24	96906	E-16	3	MS90728-111	96906	E-15	14
MS51968-24	96906	E-25	28	MS90U728-111	96906	E-15	19
MS51968-24	96906	E-31	24	MS90728-111	96906	E-16	14
MS51968-5	96906	E-05	19	MS90728-111	96906	E-23	8
MS51968-5	96906	E-08	13	MS90728-112	96906	E-18	8
MS51968-8	96906	E-05	18	MS90728-113	96906	E-15	1
MS51968-9	96906	E-09	7	MS90728-113	96906	E-16	18
MS52000-3	96906	E-06	6	MS90728-113	96906	E-17	9
MS90725-109	96906	E-18	9	MS90728-113	96906	E-18	6
MS90725-109	96906	E-35	1,1	MS90728-113	96906	E-23	1
MS90725-111	96906	E-35	10	MS90728-114	96906	E-15	6
MS90725-113	96906	E-35	6	MS90728-114	96906	E-16	23
MS90725-116	96906	E-35	9	MS90728-116	96906	E-15	7
MS90725-117	96906	E-34	18	MS90728-116	96906	E-17	14
MS90725-34	96906	E-04	17	MS90728-117	96906	E-14	14
MS90725-34	96906	E-29	25	MS90728-117	96906	E-15	8
MS90725-35	96906	E-30	1	MS90728-165	96906	E-10	26
MS90725-36	96906	E-05	10	MS90728-3	96906	E-25	20
MS90725-38	96906	E-29	28	MS90728-3	96906	E-31	27
MS90725-61	96906	E-10	19	MS90728-34	96906	E-09	2
MS90725-63	96906	E-05	16	MS90728-34	96906	E-09	24
MS90725-63	96906	E-30	12	MS90728-35	96906	E-05	7
MS90725-64	96906	E-11	9	MS90728-4	96906	E-25	40
MS90725-67	96906	E-34	19	MS90728-5	96906	E-01	11
MS90726-1	96906	E-29	13	MS90728-57	96906	E-25	32
MS90726-128	96906	E-10	17	MS90728-60	96906	E-09	21
MS90726-163	96906	E-32	9	MS90728-61	96906	E-08	8
MS90726-163	96906	E-33	12	MS90728-62	96906	E-08	12
MS90726-8	96906	E-27	2	MS90728-62	96906	E-25	3
MS90727-10	96906	E-01	30	MS90728-62	96906	E-31	3
MS90727-111	96906	E-24	9	MS90728-63	96906	E-08	32
MS90727-114	96906	E-07	9	MS90728-66	96906	E-17	4
MS90727-114	96906	E-25	16	M13486/1-5	81349	E-02	17
MS90727-114	96906	E-31	18	M13516/1-1	81349	E-01	6
MS90727-115	96906	E-07	12	10863555	19207	E-29	27
MS90727-160	96906	E-12	2	10863768	19207	E-29	29
MS90727-160	96906	E-13	15	10870570	19207	E-28	2
MS90727-168	96906	E-22	26	10870588	19207	E-21	6

PART NUMBER CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG NO,	ITEM NO.	PART NUMBER	FSCM	FIG NO.	ITEM NO.
10884527	19207	E-16	25	10940623	19207	E-06	5
10885434	19207	E-08	17	10940660	19207	E-05	12
10887246	19207	E-19	2	10940662	19207	E-04	1
10887246	19207	E-36	2	10940663	19207	E-04	19
10887388	19207	E-09	16	109.40663	19207	E-05	3
10887407	19207	E-08	16	10940664	19207	E-04	11
10887436	19207	E-09	15	10940666	19207	E-07	2
10887444	19207	E-09	13	10940668	19207	E-07	17
10887445	19207	E-09	5	10940669	19207	E-05	20
10887468	19207	E-09	1	10940670	19207	E-05	13
10887470	19207	E-33	6	10940671	19207	E-05	21
10887471	19207	E-08	29	10940672	19207	E-05	17
10887479	19207	E-08	21	10940698	19207	E-07	8
10887481	19207	E-08	28	10940713	19207	E-06	14
10887487	19207	E-09	4	10940754	19207	E-05	14
10887490	19207	E-09	17	10940771	19207	E-06	1
10887683	19207	E-29	10	10940789	19207	E-06	2
10887731	19207	E-24	13	10940820	19207	E-05	6
10887736	19207	E-08	18	10947118	19207	E-06	4
10887737	19207	E-08	9	10951608	19207	E-06	13
10887738	19207	E-08	5	10951609	19207	E-01	7
10887739	19207	E-09	20	109516 10	19207	E-01	5
10887740	19207	E-09	10	10951611	19207	E-01	10
10899963	19207	E-24	25	10951612	19207	E-01	9
10899964	19207	E-24	24	10951613	19207	E-U1	1
10899965	19207	E-24	28	10951689	19207	E-21	1
10900387	19207	E-24	30	10951755-1	19207	E-22	2
10905215	19207	E-24	29	10951755-2	19207	E-22	2
10911673	19207	E-11	5	10952095	19207	E-26	1
10911863	19207	E-01	34	10952187	19207	E-19	12
10911901	19207	E-29	1	10952229	19207	E-03	2
10915466	19207	E-01	39	10952230	19207	E-03	1
10915467	19207	E-01	36	10952231	19207	E-03	5
10915469-1	19207	E-24	12	11590939	19207	E-14	2
10915469-2	19207	E-24	14	11605388	19207	E-01	18
10915543	19207	E-08	19	11637238	19207	E-12	4
10915544	19207	E-08	26	11637238	19207	E-13	12
10934326	19207	E-13	6	11637238	19207	E-33	14
10934326	19207	E-33	5	11637640-1	19207	E-12	5
10934359	19207	E-02	1	11637640-2	19207	E-12	7
10934360	19207	E-27	8	11637640-3	19207	E-13	19
10934408	19207	E-01	32	11637640-4	19207	E-12	6
10940226-1	19207	E-19	10	11637640-5	19207	E-13	14
10940226-2	19207	E-19	10	11637640-6	19207	E-13	17
10940235	19207	E-02	6	11640676	19207	E-13	11
10940235	19207	E-27	1	11645070	19207	E-19	1
10940524-1	19207	E-22	1	11645094	19207	E-10	8
10940524-2	19207	E-22	1	11659027	19207	E-12	1

PART NUMBER CROSS-REFERENCE TO FIGURE AND ITEM NUMBERS-CONTINUED

PART NUMBER	FSCM	FIG NO,	ITEM NO.	PART NUMBER	FSCM	FIG NO.	ITEM NO.
11659028	19207	E-13	13	7261585	19207	E-22	21
11659061-1	19207	E-13	20	7261633	19207	E-22	1
11659061-2	19207	E-13	18	7261634	19207	E-22	1
11659066	19207	E-22	21	7261636	19207	E-22	2
11659074	19207	E-13	7	7201637	19207	E-22	2
11659092	19207	E-13	1	7261641	19207	E-22	28
12257291	19207	E-03	7	7261644	19207	E-22	6
122'57377	19207	E-25	35	7261645	19207	E-22	12
12257378	19207	E-25	45	7261646	19207	E-22	5
12257379	19207	E-25	36	729485	23040	E-33	17
12257381	19207	E-25	43	7323289	19207	E-32	4
12257383	19207	E-25	1	7323548	19207	E-22	17
12257469	19207	E-25	14	7323820	19207	E-32	5
12257745	19207	E-20	1	7323827	19207	E-32	7
138383	66640	E-21	11	7324392	19207	E-25	15
144245	21450	E-34	7	7324392	19207	E-31	17
190774	37695	E-10	13	7324411	19207	E-24	27
223868	21450	E-11	2	7331621	1920-7	E-30	15
228228	21450	E-02	11	7335557	19207	E-24	18
423293	00000	E-10	9	7335558	19207	E-16	11
502400	21450	E-04	26	7335558	19207	E-24	19
586229	21450	E-04	10	7339950	19207	E-16	10
586272	21450	E-04	21	7339970	19207	E-24	26
586322	21450	E-06	12	7339977	19207	E-29	18
586325	21450	E-04	8	7340000	19207	E-23	10
586325	21450	E-06	3	7340001	19207	E-23	3
586328	21450	E-04	23	7340002	19207	E-23	7
7014010	19207	E-03	4	7350920	19207	E-24	22
7027834	19207	E-25	47	7356793	19207	E-10	10
7044034	19207	E-10	12	7356794	19207	E-10	6
7044246	19207	E-07	5	7358622	19207	E-01	15
7049996	19207	E-28	1	7358623	19207	E-01	19
7049996	19207	E-30	13	7358624	19207	E-01	21
7049999	19207	E-30	18	7358625	19207	E-01	20
7064418	19207	E-29	3	7358626	19207	E-01	17
7064704	19207	E-02	15	7359964	19207	E-32	6
7064704	19207	E-27	20	7360940	19207	E-13	2
7087541	19207	E-31	4	7360940	19207	E-33	1
7087542	19207	E-25	9	7363052	19207	E-24	1
7087542	19207	E-31	11	7383581	19207	E-19	5
709513	21450	E-04	12	7383581	19207	E-36	5
714248	21450	E-04	9	7383590	19207	E-27	6
714249	99167	E-04	22	7383690	19207	E-30	16
7261470	19207	E-22	7	7383691	19207	E-30	17
7261471-1	19207	E-22	KIT	7383692	19207	E-04	24
7261472-1	19207	E-22	KIT	7383693	19207	E-04	4
7261473	19207	E-22	KIT	7383694	19207	E-05	9
7261474-1	19207	E-22	KIT	7383694	19207	E-30	3

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PART NUMBER	FSCM	FIG NO	ITEM NO	PART NUMBER	FSCM	FIG NO	ITEM NO.
7383695	19207	E-05	5	7739925	19207	E-02	12
7383697	19207	E-04	6	7739925	19207	E-27	15
7383719	19207	E-30	7	7953545	19207	E-26	3
7383723	19207	E-04	13	7953557	19207	E-35	7
7383742	19207	E-18	1	7970024	19207	E-27	7
7383742	19207	E-35	1	7970617	19207	E-01	35
7383743	19207	E-18	1	7972330	19207	E-27	4
7383743	19207	E-35	1	7972333	19207	E-02	4
7383745	19207	E-18	2	7972333	19207	E-27	13
7383745	19207	E-35	2	7972351	19207	E-02	8
7383746	19207	E-35	3	7972351	19207	E-27	5
7383747	19207	E-35	3	7972352	19207	E-27	14
7384968	19207	E-29	17	7982404	19207	E-01	24
7524649	19207	E-02	18	7982907	19207	E-01	22
7699818	19207	E-07	7	8336561	19207	E-01	23
7699877	19207	E-10	24	8376499	19207	E-01	14
7699887	19207	E-25	4	8361659	19207	E-25	22
7699887	19207	E-31	6	8381659	19207	E-31	5
7699891	19207	E-04	14	8381771	19207	E-32	1
7699893	19207	E-30	10	8381773	19207	E-33	18
7699894	19207	E-07	3	8381774	19207	E-33	16
7699926	19207	E-07	1	8383242	19207	E-10	7
7699927	19207	E-07	6	8383372	19207	E-13	4
7699942	19207	E-30	14	8383372	19207	E-33	3
7699961	19207	E-30	5	8383374	19207	E-13	5
7699964	19207	E-07	4	8383374	19207	E-33	4
7699980	19207	E-29	33	8386415	19207	E-30	4
7699987	19207	E-29	19	8386422	19207	E-30	6
7705174	19207	E-13	8	8395420	19207	E-28	4
7705174	19207	E-33	7	8395421	19207	E-28	3
7705175	19207	E-33	15	8395422	19207	E-28	8
7705177	19207	E-33	11	8395423	19207	E-28	5
7705186	19207	E-33	10	8395424	19207	E-28	7
7705557	19207	E-22	KIT	8395425	19207	E-28	9
7705558	19207	E-22	KIT	8395426	19207	E-28	10
7705559	19207	E-22	KIT	8395427	19207	E-28	6
7705560	19207	E-22	22	8395428	19207	E-21	5
7705568	19207	E-22	20	8395432	19207	E-21	13
7716520	19204	E-02	2	8395433	19207	E-21	3
7716520	19204	E-27	11	8395435	19207	E-21	2
7716521	19207	E-02	13	8395436	19207	E-21	9
7716521	19207	E-27	22	8395437	19207	E-21	7
7720499	19207	E-06	7	8395438	19207	E-21	12
7722322	19207	E-02	16	8395439	19207	E-21	8
7722322	19207	E-27	19	8395440	19207	E-21	10
7723474	19207	E-02	14	8395443	19207	E-21	4
77.23475	19207	E-02	3	8396826	19207	E-24	2
7723475	19207	E-27	12	8668465	19207	E-22	16

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PART NUMBER	FSCM	FIG NO	ITEM NO	PART NUMBER	FSCM	FIG NO	ITEM NO.
8668466	19207	E-22	18	8709802	19207	E-34	1
8668467	19207	E-22	15	8710023	19207	E-34	15
8668478	19207	E-22	4	8710027	19207	E-34	2
8675756	19207	E-10	4	8710042	19207	E-34	4
8675761	19207	E-23	5	8715761	19207	E-11	6
8675762	19207	E-23	9	8724192	19207	E-24	23
8675765	19207	E-16	9	8724763	19207	E-27	17
8686843-2	19207	E-24	21	8728125	19207	E-04	7
8686844-2	19207	E-24	20	8741800	19207	E-08	24
8690231	19207	E-34	3	8744719	19207	E-11	4
8709446	19207	E-11	11	8744840	1920,7	E-35	8
8709448	19207	E-11	7	8744885	19207	E-34	10
8709801	19207	E-14	12	8744886	19207	E-34	9
8709801	19207	E-34	16	8702797	19207	E-01	8
8709802	19207	E-14	1				

APPENDIX F

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

F-1. Scope. This appendix lists expendable supplies and materials you will need to operate and maintain the M9 Bulldozer. These items are authorized to you by CTA 50970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

F-2. Explanation of Columns.

a. Column 1 Item Number. - This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., use cleaning compound, item 5, App. D).

b. Column 2 Level. - This column identifies the lowest level of maintenance that requires the listed item..

C - Operator/Crew

O - Organizational Maintenance

F - Direct Support Maintenance

H - General Support Maintenance.

c. Column 3 - National Stock Number. This is the national stock number assigned to the item; use it to request or requisition the item.

d. Column 4 - Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. Column 5 - Unit of Measure U/M. Indicates the measure used in performing the actual maintenance function. This measure is expressed by a twocharacter alphabetical abbreviation (e.g., Lb, Qt, Ga). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section IL EXPENDABLE SUPPLIES AND MATERIALS

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS.
1	0	5350-00-192-5094	CLOTH, ABRASIVE, 12 GRIT, 50 SHEETS	Sh
2	0	5350-00-192-5047	CLOTH, ABRASIVE, ALOXIDE, 80 GRIT, 50 SHEETS	Sh
3	0	5350-00-192-5051	CLOTH, ABRASIVE, ALOXIDE, 180 GRIT, 50 SHEETS	Sh
4	0	5350-00-221-0872	CLOTH, ABRASIVE, CROCUS, CA, 50 SHEETS	Sh
5	C	9150-00-190-0904	GREASE, AUTOMOTIVE AND ARTILLERY, GAA 1 LB CAN	Lb
6	C	9150-00-935-1017	GREASE, AUTOMOTIVE AND ARTILLERY, GAA, 14 OZ CARTRIDGE	Oz
7	C	9150-00-190-0905	GREASE, AUTOMOTIVE AND ARTILLERY, GAA, 5 LB CAN	Lb
8	C	9150-00-265-9425	OIL, LUBRICATING, ENGINE OE 10, 1 QT CAN	Qt
9	C	9150-00-231-2360	OIL, LUBRICATING, MEDIUM, PL, GP, 2 OZ CAN	Oz
10	C	9150-00-231-2361	OIL, LUBRICATING, MEDIUM, PL, SP, 1 QT CAN	Qt
11	C	9150-00-231-6689	OIL, LUBRICATING, SPECIAL PL, 1 QT CAN	Qt
12	C	7920-00-205-1711	RAG, WIPING, COTTON, 50 LB BALE	Lb
13	C	6850-00-664-5685	SOLVENT, DRYCLEANING, SD, 1 QT CAN	Qt
14	C	6850-00-281-1985	SOLVENT, DRYCLEANING, SD, 1 GAL CAN	Ga
15	F	6850-01-015-0834	LAYOUT DYE, BLUE 16 OZ CAN (MIL-L-83795)	Oz
F-2				

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THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 Lb
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

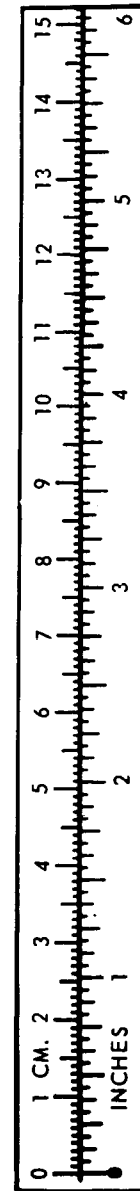
TEMPERATURE

$5.9^{\circ}\text{F} - 32 = ^{\circ}\text{C}$
 $212^{\circ}\text{Fahrenheit}$ is equivalent to $100^{\circ}\text{Celsius}$
 $90^{\circ}\text{Fahrenheit}$ is equivalent to $32.2^{\circ}\text{Celsius}$
 $32^{\circ}\text{Fahrenheit}$ is equivalent to 0°Celsius
 $9^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

<u>TO CHANGE</u>	<u>TO</u>	<u>MULTIPLY BY</u>
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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